

SONY.

COLOR VIDEO PRINTER

UP-2800

UP-2900MD

UP-2950MD

UP-2300

UP-2800P

UP-2850P

UP-2300P

SERVICE MANUAL

Vol. 1 (1st Edition)

TABLE OF CONTENTS

1. OPERATING INSTRUCTIONS	1-1	4-1-4. Memory (DRAM) block	4-11
2. SERVICE INFORMATION		4-1-5. Memory Control Block	4-13
2-1. BOARD LAYOUT	2-1	4-1-6. Color Adjustment Block	4-15
2-2. DISASSEMBLY	2-1	4-1-7. Sampling Clock Generator	4-16
2-2-1. Removal of the Top cover	2-1	4-1-8. Masking Block	4-17
2-2-2. Removal of the Front Panel Assembly	2-1	4-1-9. Bus Switcher	4-17
2-2-3. Removal of the VA-181 board	2-2	4-1-10. A/D and D/A Conversion Blocks	4-18
2-2-4. Removal of the FMY-21 Board	2-2	4-2. CIRCUIT OPERATION DESCRIPTION	
2-2-5. Removal of the SY-250 Board	2-3	OF SY-250 BOARD	4-26
2-2-6. Removal of the IF-672 Board (IF-710 board)	2-3	4-2-1. Address Map	4-26
2-2-7. Removal of the DC Fan (1)	2-3	4-2-2. Circuit Operation	4-26
2-2-8. Removal of the Rear Panel	2-3	4-2-3. VA-181 Board Control	4-28
2-2-9. Removal of the Switching Regulator	2-4	4-2-4. Communication	4-30
2-2-10. Removal of the DC Fan (2)	2-4	4-3. ANALOG VIDEO SIGNAL PROCESSING	
2-2-11. Removal of the Mechanical Block	2-4	BLOCK	4-33
2-2-12. Removal of the PRT-11 Board	2-5	4-3-1. Outline	4-33
2-2-13. Removal of the Tray Motor	2-5	4-3-2. IF-672 Board (IF-710 board) (Interface Block)	4-33
2-2-14. Removal of the SE-418 Board and Paper Supply Motor	2-6	4-3-3. VA-181 Board (Decoder and Encoder Blocks)	4-34
2-2-15. Removal of the Ribbon Motor	2-6	4-3-4. FMY-21 Board (A/D and D/A converters)	4-43
2-2-16. Removal of the Stepping Motor	2-7	4-4. Print control section (PRT-11 BOARD)	4-45
2-2-17. Removal of the Load Block Assembly	2-7	4-4-1. Fan motor drive circuit	4-45
2-2-18. Removal of the Head Motor	2-8	4-4-2. Ribbon motor drive circuit	4-46
2-2-19. Removal of the DC Fan (3)	2-8	4-4-3. Paper supply motor drive circuit	4-46
2-3. THERMAL HEAD REPLACEMENT	2-9	4-4-4. Head motor and tray motor drive circuit	4-46
3. ELECTRICAL AND MECHANICAL ALIGNMENT		4-4-5. Platen motor drive circuit	4-47
3-1. ELECTRICAL ADJUSTMENT	3-1	4-4-6. Various kinds sensor detection circuit	4-49
3-1-1. Outputting the Test Pattern in the Service Mode	3-1	4-4-7. Paper ejector motor drive circuit	4-56
3-1-2. Concentration Adjustment during Thermal Head Replacement	3-3	5. MECHANICAL DESCRIPTION	
3-1-3. Electrical adjustment(analog section)	3-4	5-1. Mechanical Operation Description	5-1
3-2. MECHANICAL ADJUSTMENT	3-13	5-2. Printing operation description	5-4
3-2-1. Mechanical Adjustment Mode	3-13	5-2-1. Position change during printing operation	5-4
3-2-2. Entering the Mechanical Adjustment Mode	3-13	5-2-2. Home position	5-5
3-2-3. Normal Operation Confirmation and Automatic Adjustment	3-14	5-2-3. Delivery paper position	5-6
4. CIRCUIT DESCRIPTION		5-2-4. Printing position	5-7
4-1. DIGITAL VIDEO SIGNAL PROCESSING		5-2-5. Fast forward position	5-7
BLOCK	4-1	5-2-6. Delivery paper position (Almost same as home position)	5-8
4-1-1. Outline	4-1	5-3. Platen drive section	5-9
4-1-2. Flow of Video Signal in Each Operation Mode	4-2	5-3-1. Platen drive section gear ratio	5-9
4-1-3. Basic Operation Timing and CPU	4-6	5-3-2. Unevenness print	5-9
4-1-4. Memory (DRAM) block	4-11	5-4. Paper supply and eject drive section	5-10
4-1-5. Memory Control Block	4-13	6. TROUBLE SHOOTING	
4-1-6. Color Adjustment Block	4-15	6-1. Video (image) relation trouble	6-1
4-1-7. Sampling Clock Generator	4-16	6-2. Error indication	6-3
4-1-8. Masking Block	4-17	6-3. Mechanism Troubleshooting	6-9
4-1-9. Bus Switcher	4-17		
4-1-10. A/D and D/A Conversion Blocks	4-18		

SONY.

3-860-608-21 (1)

SECTION 1 OPERATING INSTRUCTIONS

Color Video Printer

Instructions For Use Page 2

Before operating this unit, please read this manual thoroughly and retain it for future reference.



UP-2300P/2800P/2850P

UP-2900MD/2950MD

© 1997 by Sony Corporation

This section is extracted
from operation manual.

Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____
Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.
To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

For UP-2800P/2850P/2900MD/2950MD
Symbol on the products



This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the customers in the U.S.A.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.
This device requires shielded interface cables to comply with FCC emission limits.

For the customers in Canada (for UP-2800P/2850P/2900MD/2950MD)

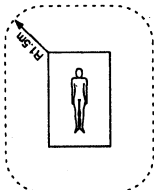
This unit has been certified according to Standard CSA C22.2 No.601.1.

For the customers in Europe (for UP-2800P/2850P/2900MD/2950MD)

Important safeguards/notices for use in the medical environments

- 1. All the equipments connected to this unit shall be certified according to Standard IEC601-1, IEC950, IEC66 or other IEC/ISO Standards applicable to the equipments.
- 2. When this unit is used together with other equipment in the patient area*, the equipment shall be either powered by an isolation transformer or connected via an additional protective earth terminal to system ground unless it is certified according to Standard IEC601-1.

* Patient Area



- 3. The leakage current could increase when connected to other equipment.
- 4. This equipment generates, uses, and can radiate frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to other equipment. If this unit causes interference (which can be determined by unplugging the power cord from the unit), by these measures:
Relocate the unit with respect to the susceptible equipment. Plug this unit and the susceptible equipment into different branch circuit. Consult your dealer.

Tabel of Contents

Introduction	5
About This Manual	5
System Overview	7
System Configuration	8
Operation	9
Before Printing	9
Loading an Ink Ribbon Cartridge	9
Loading Paper	12
Selecting the Input Signal	14
Making Full-Size Printouts	16
Making Multiple Copies of Identical Printouts	19
Capturing Another Image While Printing	22
Making Variations of Printouts	24
Selecting the Printer Application Mode	25
About the Memory	28
Making a Printout of Multiple Different Reduced Images	32
Making Printouts for Stickers	42
Making Printouts for Identification Photographs	43
Making Printouts With a Caption	50
Entering a Caption	51
Deleting the Images Stored to Memory Pages	56
Setting the Function of the CLEAR Button	56
Deleting Images	59
Installation and Adjustment	61
Supplied Accessories	61
Assembly	62
Preparing the Remote Control Unit	63
Connections	65
Making Connections for Storing Video Images	65
Making Connections for Viewing Images to be Printed	66
Making Connections to Enable Remote Control	67

Continue to next page →

Tabel of Contents

Installation and Adjustment
(Continued)

Setting Up the Printer	68
Compensating for the Input Signals	69
Matching the Video Monitor Color to the Printer Color	72
Adjusting the Printout Color	75
Changing the Printout Size/Printout Area	82
Selecting the Operation Mode for Automatic Printing Capabilities	85
Erasing the Screen Display	89
Adjusting the Brightness of the Printer Window Display	91
Selecting Whether the Operation and Error Tones Sound	93
Setting the Baud Rate for Computer Communication ..	95

Others

Precautions	97
Safety	97
Installation	97
Cleaning	98
Ink Ribbon Cartridge and Paper	99
Specifications	100
Error/Warning Messages	103
If the paper jams	105
Troubleshooting	107
Location and Function of Parts and Controls	108
Front	108
Sub Panel	110
Rear	111
Monitor Display	113
Index	115

About This Manual

This manual covers the following UP-2000 series color video printers.

- UP-2300P
- UP-2800/2800P
- UP-2850P
- UP-2900MD
- UP-2950MD

Wherever the operation or any other item differs between the models, this manual clearly describes those differences.

The difference among models is as follows.

	No. of memories	RGB SYNC connector	Printer window display (LCD)	NTSC/PAL selector (TV system)
UP-2300P	1	None	None	None (PAL)
UP-2800P	1	Yes	Yes	None (PAL)
UP-2850P	4	Yes	Yes	None (PAL)
UP-2900MD	1	Yes	Yes	Yes (NTSC/PAL)
UP-2950MD	4	Yes	Yes	Yes (NTSC/PAL)

In this manual, the UP-2950MD is used for illustrations.

Also, the monitor display and printer window display are used to explain the operation. If your printer is a UP-2300P which is not equipped with the printer window display, perform operations according to the monitor display explanation.

Organization of this manual

This manual is divided into four chapters. This section explains the organization of this manual.

Introduction

Describes the features and system configuration of the color video printer.

Operation

Describes actual printing once all connections and adjustments have been made, as explained in the next chapter. You will be able to make various types of printouts after reading through this chapter.

Installation and adjustment

Describes how to make connections and make adjustments using the menus displayed on the video monitor and printer window display. Once all connections and adjustments have been made, there should be no need to perform these operations again during normal printing operations. These operations must, however, be performed after reinstalling, or if the picture quality degrades, or if adjustment becomes necessary because the peripheral equipment is changed. Also covered is the use of the printer's remote control unit (not supplied).

About This Manual (continued)

Others

Notes the precautions to be observed when using the printer, lists errors, warnings and their handling, and explains troubleshooting. Also provided is information on the locations and functions of parts and controls, and the on-screen messages and menus used to operate the printer. Should you encounter any unfamiliar terms or items while reading this manual, consult the index at the end of the manual.

Conventions used

Cross references

Throughout this manual you will find references to other sections of the manual that contain related information.

Important note

Be sure to read the sections of the manual marked **Note**. They explain points that you should be aware of to operate the printer correctly and prevent malfunctions.

Index

Use the index, in addition to the table of contents, to find information you need when using the printer.

Monitor displays

Some monitor displays illustrated in this manual may differ slightly from the actual display. The operation of the printer, however, remains as described in this manual.

System Overview

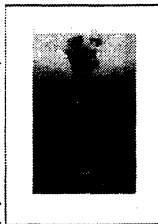
The UP-2000 series color video printer is designed for capturing images from video equipment such as VTR and for printing out high-resolution images, either in 256 shades in full color (about 300 dpi). You can make various types of printouts. You can also add a caption onto the printout. You can operate the daily printer operation by using the buttons and setup the printer interactively by picking from displayed menus.

Printouts that can be made with the printer

Printout of a full-size image (page 16)



Printout of two reduced images (page 32)
Capturing the whole screen
(only for UP-2850P/2950MD)



Printout of two reduced images
Capturing the center of the screen (page 32)



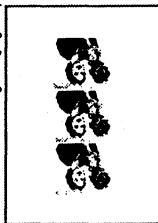
Printout of four reduced images
(page 32)



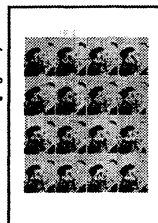
Printout of 16 reduced images (page 32)



Printout of identical images * (page 43)



Printout for stickers * (page 42)



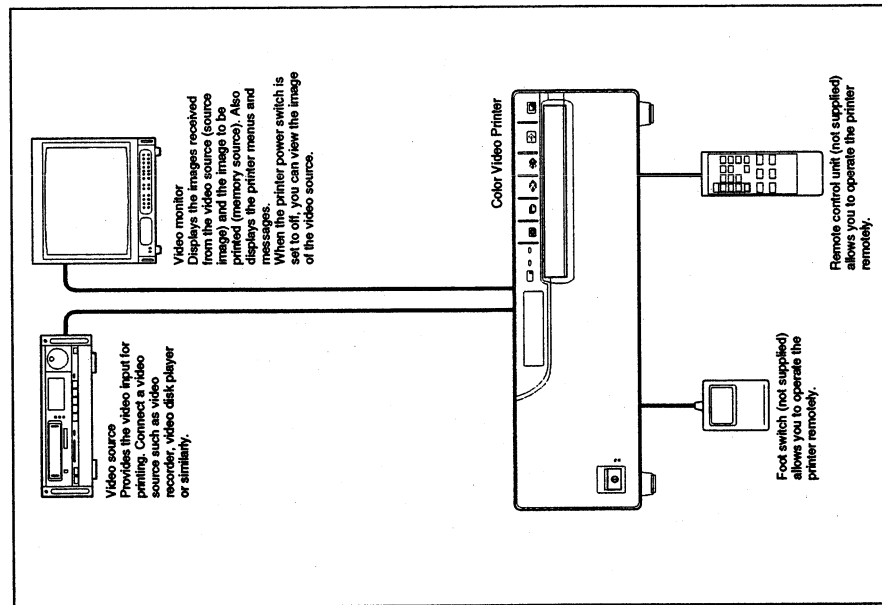
- This can be used for identification photographs and there are two types.
In one type, the size of one image in one printout can be adjusted freely. In the other, the size of one image is fixed.
For details, see page 43.
- The size of the printout of stickers-printouts.
In one type, all images in a single printout are identical. In the other, all images in a single printout are different.
For details, see page 42.

You can add a caption onto printouts introduced here.

System Overview (continued)

System Configuration

The following shows an example printer system configuration.



Operation

Before Printing

This section describes the following operations that must be made prior to starting printing after mounting the paper tray and paper cover on the printer and making the necessary connections.

- Loading an ink ribbon cartridge (see below)
 - Loading paper (see page 12)
 - Selecting the input signal (see page 14)
- Once the above operations have been completed, there should be no need to repeat them during routine printing. Perform them only when absolutely necessary.

Loading an Ink Ribbon Cartridge

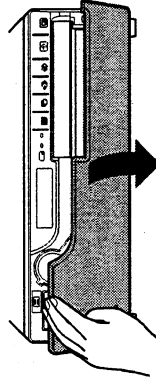
To make printouts, an ink ribbon cartridge and paper (which are compatible) must be loaded. (see "Ink Ribbon Cartridge and Paper" page 99)

If the printer detects an incompatible combination, an error message appears. Use the ink ribbon cartridge and print paper (supplied) to check if the video printer functions properly.

Notes

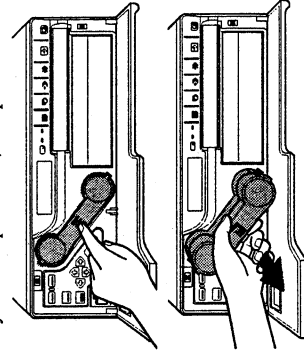
- Use only ink ribbon cartridge and paper that are designed for use with this printer. Failing to do so is likely to result in unsatisfactory printing or malfunctions.
- When replacing the ink ribbon cartridge, do not turn off the power. Turning off the power will cause the image stored in the memory to be lost.

- 1 Open the front panel by pulling the front panel top toward you.



- 2 Remove the ink ribbon cartridge by pushing the ink ribbon cartridge itself.

The ink ribbon cartridge pops out. When you use the printer first, this operation is not required.

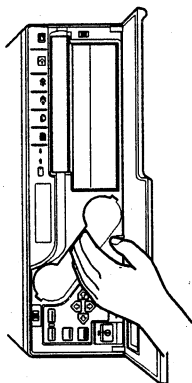


Continue to next page →
Operation | 9

Before Printing (continued)

Note

Never put your hand into the ink ribbon compartment. The thermal head becomes very hot. You may burn yourself if you touch it.



When the ink ribbon cartridge cannot be ejected

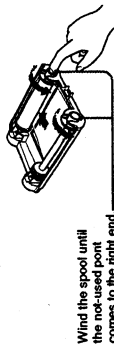
Turn the power off, then back on again. Then, after a while, press the ink ribbon cartridge.

In this case, the image in memory will be lost.

3

Remove any slack from the ink ribbon.

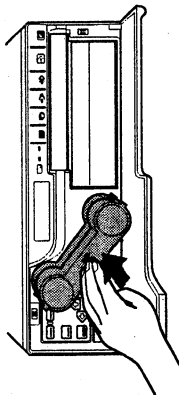
If the ribbon is left slack, it may be damaged when inserted.



Wind the spool until the not-used part comes to the right end.

4

Insert the ink ribbon cartridge firmly until it stops.

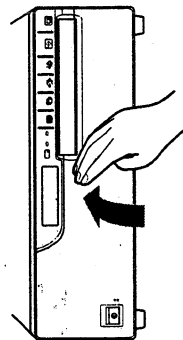


When the ink ribbon cartridge cannot be inserted

Turn the power off, then back on gain. Then, insert the ink ribbon holder.

5

Close the front panel.



Notes

When using ink ribbon cartridge

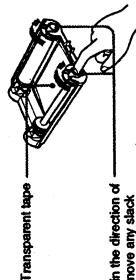
- Once an ink ribbon cartridge has been completely used, replace it. Ink ribbon cartridges are not reusable.
- Do not touch the ink ribbon cartridge or place it in a dusty location. Finger prints or dust on the ink ribbon will result in imperfect printing or malfunction of the head.

When storing ink ribbon cartridge

- Avoid placing the ink ribbon in a location subject to:
 - high temperatures
 - high humidity
 - excessive dust
 - direct sunlight
- Store a partially used ink ribbon cartridge in its original packaging.

If your ink ribbon should tear

Repair the tear with transparent tape. There should be no problem with using the remaining portion of the ribbon.



Transparent tape

Turn the spool in the direction of the arrow to remove any slack until the transparent tape cannot be seen.

Before Printing (continued)

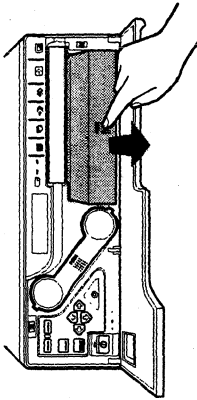
Loading Paper

To load paper, follow the procedure below. Be careful not to touch the printing surface.

Notes

- When loading the paper while the printer is operating, do not turn off the power. Turning off the power will cause the image stored in memory to be lost.
- Do not touch the ink ribbon when handling the paper.

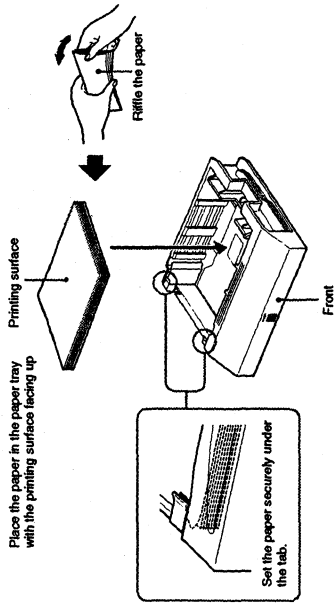
- 1 Open the front panel by pulling the front panel top towards you.
- 2 Push the part marked with PUSH on the paper tray. The paper tray pops out.



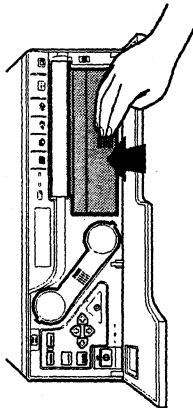
- 3 Place the paper in the paper tray.

Notes

- The amount of paper that the paper tray holds depends on the paper in use. When adding paper to a partly full tray, be careful that the total number of sheets does not exceed the limit. If you exceed this limit, paper jams may occur. The limit is the amount of paper contained in one printing pack. For detailed information on the maximum amount of paper that the paper tray can hold, see "Ink Ribbon Cartridge and Paper" page 99.
- Do not place different types of paper in the tray. Doing so may cause paper jams to occur.
- Load the paper so that it lays flat in the paper tray. If the paper is curled, it will overflow from the paper tray and the printing position may shift. If this happens, load fewer sheets in the paper tray.



- 4 Slide the paper tray back into the printer until it clicks into place.



- 5 Close the front panel.

Notes

When handling the paper

Do not touch the printing surface. Dust or finger prints are likely to cause unsatisfactory printing or malfunction of the head. Hold the paper by the printing surface protection sheet.

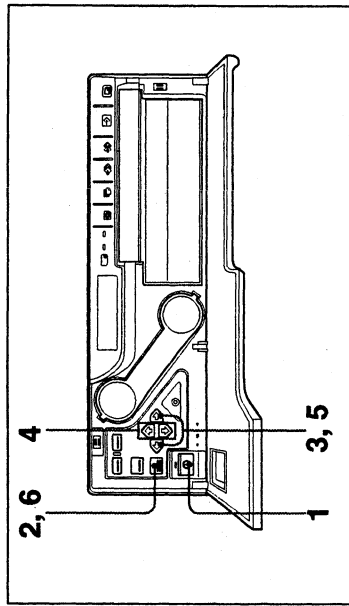
When storing the paper

- Avoid storing the paper in a location subject to:
 - high temperatures
 - high humidity
 - excessive dust
 - direct sunlight
- Use the original package for storing unused paper.

Before Printing (continued)

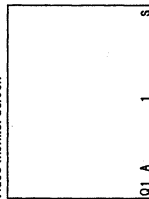
Selecting the Input Signal

Before printing, select the input signal (the input connector to which the signal to be printed is being input—VIDEO, S-VIDEO, or RGB (except UP-2300P). Once you have selected the input signal, this setting remains effective until you select another source.

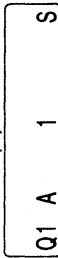


- 1 Turn on the video monitor and the printer.
The following appears.

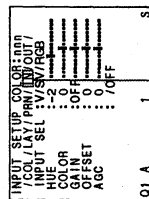
Video monitor screen



Printer window display



- 2 Press the MENU button.
The screen previously poened appears.
- 3 Select IN by pressing the ◀ or ▶ button.

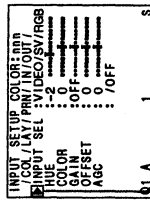


By switching IN to green with the ◀ or ▶ button, INPUT SETUP appears.

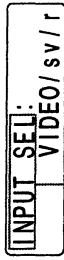


Display IN in capital letters by pressing the ◀ or ▶ button. INPUT SETUP appears.

- 4 Select INPUT SEL by pressing the ◀ or ▶ button.

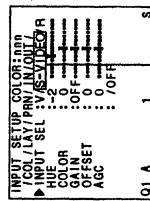


Press the ◀ or ▶ button until INPUT SEL appears.

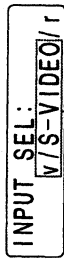


Position the cursor to INPUT SEL by pressing the ◀ or ▶ button.

- 5 Select the input signal by pressing the ◀ or ▶ button.



Display the spoiled-out input signal by pressing the ◀ or ▶ button. The selected input signal turns green and is spelled out.



Source signal of the image to be printed

Video monitor and printer window display (the selected input signal is spelled out)	V → VIDEO
---	-----------

Signal from video equipment connected to the VIDEO INPUT connector

Signal from video equipment connected to the S-VIDEO INPUT connector

Signal from video equipment connected to the RGB/SYNC INPUT connectors^a R → RGB

a) Models except UP-2300P are equipped with the RGB/SYNC connectors.

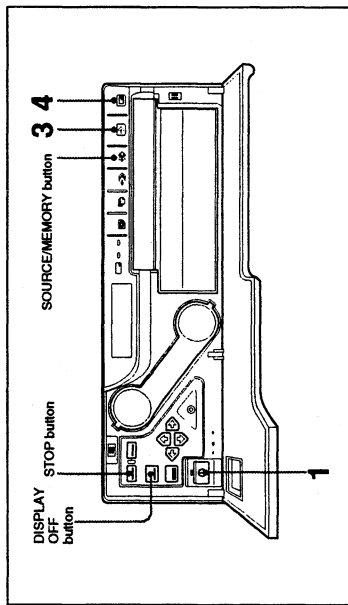
- 6 Press the MENU button.
The regular screen appears.

Making Full-Size Printouts

This section explains how to make a full-size printout. The operations described here constitute the basic procedure for making a printout.

Before making a full-size printout

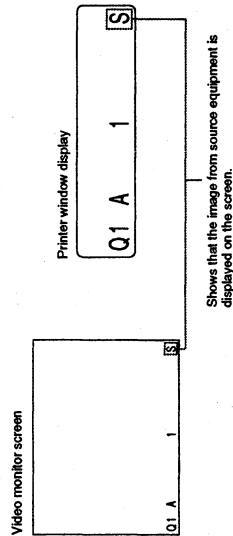
- All connections should have already been made. (see page 65)
- Ensure that the appropriate ink ribbon cartridge/paper set is being used and that they are correctly loaded. (see pages 9, 12 and 99)
- Select the input signal to be used to make a printout. (see page 14)
- Set the printer to store one full-size image into memory. (see page 32)
- Select the appropriate memory page. (see page 31)



1 Turn on the video monitor and the printer.

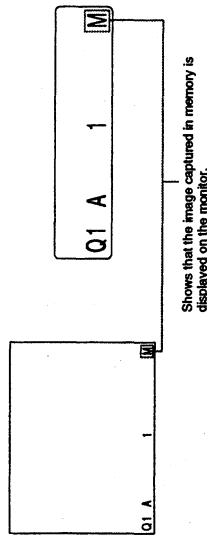
2 Start the video source.

This operation is done using the controls of the video equipment acting as the source.



3 Press the CAPTURE button at the instant when the image you want to print appears on the screen.

The image is captured into memory. The memory image is displayed on the screen. Which image appears after this, the source image or memory image, depends on the setting made with AUTO LIVE on the FUNCTION SETUP menu (page 38).



If the stored image is blurred

A quickly moving image may be blurred when printed. Should this occur, change the MEMORY setting to FIELD on the LAYOUT SETUP menu. Although the blur should be eliminated, the ultimate print quality will be slightly degraded. For details, see page 29.

To change the image in memory

① To display the source image when the memory image is displayed on the screen, press the SOURCE/MEMORY button.

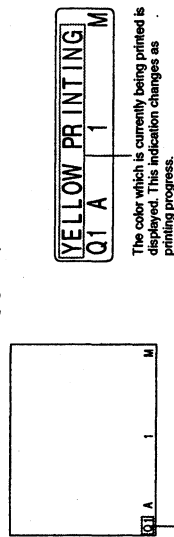
② Press the CAPTURE button at the instant the image you want to print appears. The previous image is replaced with the new one.

Note

If you turn off the power, the image stored in memory will be lost. Should this happen, store the image into memory again after turning on the power. If no image is stored in memory, the printer will not print even if you press the PRINT button.

4 Press the PRINT button.

It takes about 35 seconds to make a printout. The printout pops out from the paper tray.



Blinks while printing

During color printing: Printing start - yellow - magenta - cyan - printing end
During black and white printing: Printing start - white - printing end
Does not blink while printing

Making Full-Size Printouts (continued)

Note

- Do not turn off the power during printing.
- If you do so, paper may not be ejected and may jam in the printer.
- Do not pull the paper from the paper cover until printing has been completed.
- You can not change the printer application mode or settings on the WINDOW SETUP menu during printing.

To stop printing

Press the STOP button. Printing is abandoned and the paper is ejected to the print tray.

If the printer does not print

The printer will fail to print in the following cases:

- While an error message is displayed on the monitor screen and printer window display.
- In this case, the paper is ejected without printed even if you press the PRINT button. Proceed as described in "Error/Warning Messages" on page 103.
- Image is not stored in the memory.
- Image data stored in the memory is lost if you turn off the power. Capture the image into memory again, then press the PRINT button.

When you want to see an image that is hidden below a screen message

You can erase the screen message from the video monitor screen by pressing the DISPLAY OFF button. The screen message disappears. To display a screen message, press the DISPLAY OFF button again.

If a black line appears on the printout

Sometimes, a black line appears on the printout, although it does not appear on the video monitor. This black line can be eliminated from the printout. (See "Changing the Printout Size/Printout Area" page 82)

If the image quality of printouts is not satisfactory

You can adjust the image quality of the printouts. (See "Adjusting the Printout Color" pages 75)

Notes

When storing your printouts:

- Avoid storing the printout in a location subject to high temperatures, high humidity, excessive dust and direct sunlight.
- Do not stick tape on a printout. Also, avoid leaving a plastic eraser on a printout or placing a printout in contact with materials which contain plasticizer (under a desk mat, for example).
- Do not allow alcohol or other volatile organic solvents to come into contact with the printouts.

Making Multiple Copies of Identical Printouts

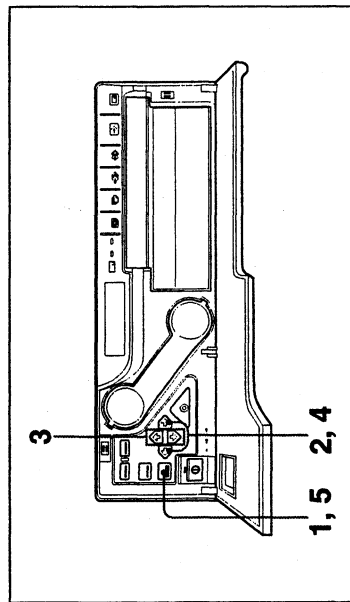
You can make up to 9 copies of identical printouts.

The following two methods are available to set the number of printouts.

- On the menu
- Using the PRINT QTY button. However, you cannot decrease the number of printouts.

The following steps can be performed either before you start printing or while printing. You can change the designated number of copies any time during printing.

Setting the printout quantity on the menu



- 1 Press the menu button.
The menu previously opened appears.

- 2 Select PRN by pressing the right arrow button.
The PRINTER SETUP menu appears.

PRINTER SETUP	COLOR	mm
PRINT QTY	1-9	
INTERVAL	OFF/ON	
SAVING	NORMAL/H	
FUNCTION	PRINT	
	PRESS 12	
Q1	A1	2HF
		S

By switching PRN to green by pressing the right arrow button, PRINTER SETUP appears.

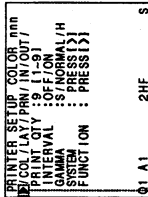
PRINTER SETUP
/C//PRN//1/0/

Display PRN in capital letters by pressing the right arrow button.

Continue to next page →

Making Full-Size Printouts (continued)

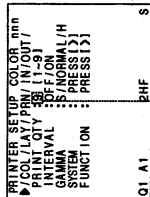
- 3 Select PRINT QTY by pressing the $\diamond$ or $\triangle$ button.



Press the $\diamond$ or $\triangle$ button until PRINT QTY appears.

Position the cursor to PRINT QTY by pressing the $\diamond$ or $\triangle$ button.

- 4 Set the number of copies by pressing the $\diamond$ or $\triangle$ button.

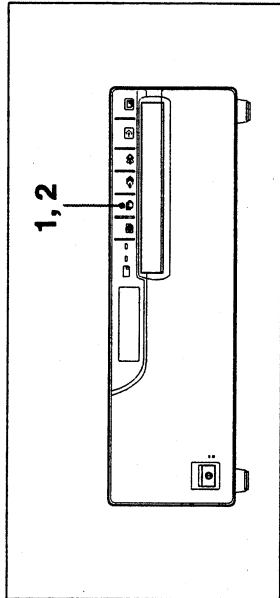


Quantity of copies

When setting	Button
To increase the quantity	$\diamond$
To decrease the quantity	$\triangle$

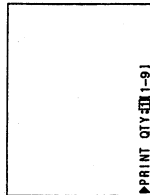
- 5 Press the MENU button.
The regular screen appears.

Setting the print out quantity by using the PRINT QTY button



- 1 Press the PRINT QTY button.

The following screen appears.
If you do not perform any operation after you press the PRINT QTY button, the currently set number of copies appears for 2 or 3 seconds, after which it disappears.



The currently set number of copies appears within a couple of seconds.

The currently set number of copies appears within a couple of seconds.

- 2 Press the PRINT QTY button until the desired number appears.
Repeatedly pressing the PRINT QTY button increases the quantity up to 9 and stops.

To decrease the number of copies

When decreasing the number of copies, you have to change the number on the menu.

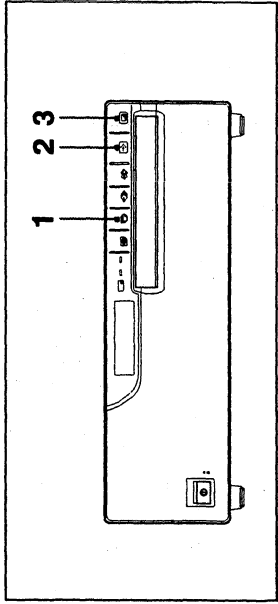
If the paper runs out during printing

Load the paper into the paper tray and press the PRINT button. The printer prints the remaining copies.

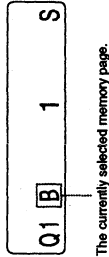
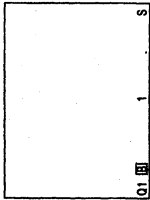
Making Full-Size Printouts (continued)

Capturing Another Image While Printing

While the printer is printing, you can capture another image into another memory page to be printed once the printer becomes free. The usable memory pages depend on the type of printouts and settings. (pages 28 and 29)
For UP-2300P/2800P/2900MD, you can capture another image while printing only in field mode.



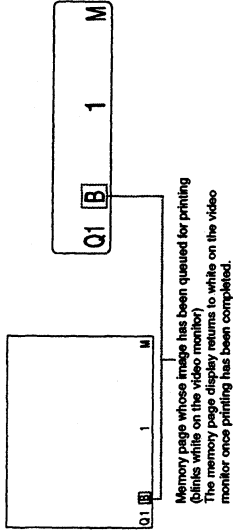
- 1** Select the desired memory page by pressing the MEMORY PAGE button. Pressing the MEMORY PAGE button switches the memory page.



- 2** Press the CAPTURE button at the instant the image you want to print appears on the screen.

Note
If you press the CAPTURE button to capture the image into memory page whose image is being printed, "PLEASE WAIT PRINTING MEMORY" appears and the image cannot be captured.

- 3** Press the PRINT button.
The image captured in step 2 is queued. The image is printed as soon as all previous printing jobs have been completed.



- 4** To queue another memory page, repeat steps 1, 2 and 3.

Note
Another image cannot be stored into a memory page into which an image has already been queued for printing. In such a case, the "PLEASE WAIT RESERVED MEMORY" appears.

Variations of printouts that the printer can produce

Printout of two reduced images ^{a)}

Printout of a full-size image

Printout of four reduced images

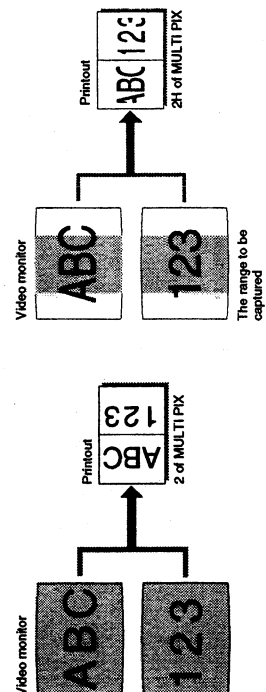
Printout for stickers ^{a)}

Printout of 16 reduced images

Printout of identical images ^{a)}

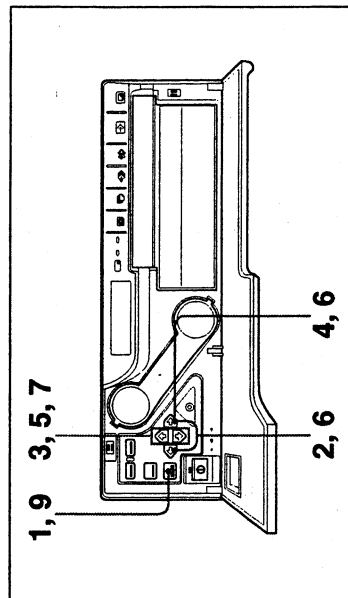
- ### About the printout with two reduced images

For the item 2H print mode, the image in the center of the screen is captured in memory.



Selecting the Printer Application Mode

Select the application mode according to what kind of printouts you want to make.



- 2** Select PRN by pressing the $\leftrightarrow$ or $\rightarrow$ button. The PRINTER SETUP menu appears.

01 A1
 02E
 0
 PRINT SETUP COLOR nnn
 ▶/COL/LAT/PERU/INT/OUT/
 PRINT QTY : 9 [1-9]
 INTERVAL : OFF/ON
 GAMMA : S/NORMAL/H
 SYSTEM : PRESS[>]
 FUNCTION : PRESS[>]

Display PRN in capital letters by pressing the $\diamond$ or $\circ$ button.

By switching PRN to green by pressing the $\leftrightarrow$ or $\rightarrow$ button, PRINTER SETUP appears.

Continue to next page →

- ```

PRINTER SETUP COLOR mmm
/COL/LAY/PRN/IN/OUT/
PRINT QTY : 9 [1-9]
INTERVAL : OFF/ON
GAMMA : S/NORMAL/H
SYSTEM : PRESS [>]
FUNCTION : PRESS [>]
01 A1 2HF S

```

Press the  $\diamond$  or  $\diamond$  button until SYSTEM appears.

Position the cursor to SYSTEM by pressing the  $\uparrow$  or  $\downarrow$  button.

- SYSTEM SETUP COLOR nnn  
 PRN SETUP : PRESS [2]  
 LCD-CNTR. : 5  
 BAUDRATE : /24/4800/96  
 BEEP : OFF/ON  
 APPL. : STANDARD/

## SYSTEM SETUP

- SYSTEM SETUP COLOR mmm  
PRN SETUP : PRESS [2]  
LCD-CONTR. : 5  
BAUDRATE : /2474800/96  
BEEP : OFF/ON  
APPLI. : STANDARD/

Press the  or  button until APPLI. appears.

Position the cursor to APPL1, by pressing the  $\diamond$  or  $\nabla$  button.

- |                        |       |
|------------------------|-------|
| SYSTEM SETUP COLOR nnn |       |
| PRN SETUP :PRESS 121   |       |
| LCD-CNTR. :5           |       |
| BAUDRATE :/24/4800/96  |       |
| BEEP :OFF/LON          |       |
| APPLI. :FLEX IPP W/    |       |
| Q1 A1                  | 2HF S |

Display the desired mode in capital letters by pressing the  $\leftrightarrow$  or  $\Rightarrow$  button.

Switch the desired mode to green by pressing the  $\diamond$  or  $\diamond$  button.

| Application mode       | Printout                                                                                                                                    |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Standard               | Printout with a full-size image, two different reduced images <sup>a)</sup> , four different reduced images and 16 different reduced images |
| FLEX IPP <sup>b)</sup> | Printout with identical images of the desired size                                                                                          |
| FIXED IPP              | Printouts of a full-size image, four identical reduced images and 16 identical reduced images                                               |
| STICK DIF              | Sticker-type printouts with different reduced images                                                                                        |
| STICK DUP              | Sticker-type printouts with identical reduced images                                                                                        |

a) There are two types: One is "Z" and the other is "2H". "Z" is only for UP-2850P/2950MD.  
b) As unit of the image size, either "mm" or "inches" can be selected.

- 7** Select PRN SETUP by pressing the  $\blacktriangle$  or  $\blacktriangledown$  button.

- 8** Press the  $\rightarrow$  button.  
The PRINTER SETUP menu appears.

- 9** Press the **MENU** button.  
The regular screen appears.

### Note

Changing the application mode results in clearing images stored in all of memory pages.

Making Variations of Printouts (continued)

About the Memory

To make printouts, it is first necessary to capture the image into memory. When capturing the image, there are two ways to use the memory, one is frame mode and the other is field mode.

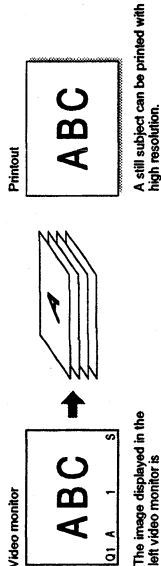
**Frame mode:** A image is captured in one memory.

**Field mode:** A memory is divided into two, and images can be captured in each. A memory in which an image is captured is called memory page in this manual. The number of usable memory pages depends on the type of the selected reduced images and memory mode.

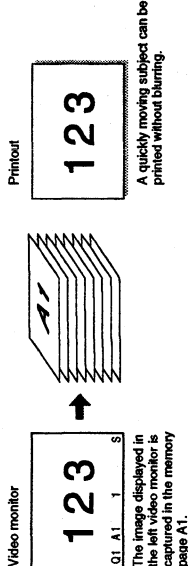
| Printer               | Reduced image | Memory mode | Number of memory pages             |
|-----------------------|---------------|-------------|------------------------------------|
| UP-2850P/2950MD       | 1/2H/2/4/16   | Frame       | 4 (A,B,C,D)                        |
|                       | 1/2H/2        | Field       | 8 (A1, A2, B1, B2, C1, C2, D1, D2) |
| UP-2300P/2800P/2900MD | 1/2H/4/16     | Frame       | 1 (A)                              |
|                       | 1/2H          | Field       | 2 (A1, A2)                         |

When you select four-reduced image mode or 16-reduced image mode, the unit selects automatically frame mode regardless of the setting of MEMORY on the LAYOUT SETUP menu.

In frame mode



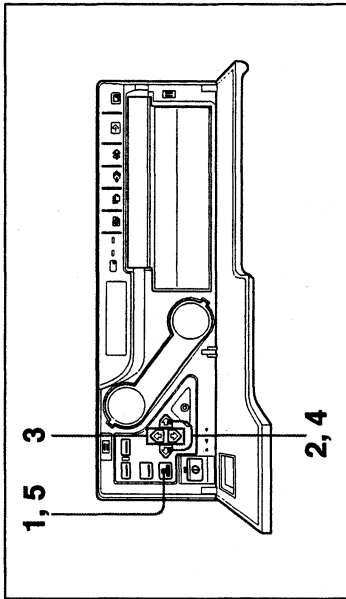
In field mode



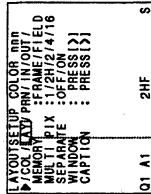
The above illustrations show the case of UP-2850P/2950MD. In case of UP-2300P/2800P/2900MD, there is one memory page in frame mode and two memory page in field mode.

Selecting the memory mode

**Note**  
You can select the desired memory page only when 1, 2 or 2H is selected in STANDARD mode.



- 1 Press the MENU button.  
The menu just before opened appears.
- 2 Select LAY by pressing the  $\leftarrow$  or  $\rightarrow$  button.



By switching LAY to green by pressing the  $\rightarrow$  button, LAYOUT SETUP appears.

Display LAY in capital letters by pressing the  $\rightarrow$  or  $\leftarrow$  button.

Continue to next page  $\rightarrow$

Making Variations of Printouts (continued)

3 Select MEMORY by pressing the  $\diamond$  or  $\nabla$  button.

LAYOUTSETUP COLOR:nan  
/COL/LAY/PRN/IN/OUT/  
MEMORY:PIX:FRAME/field  
SEPARATE:OFFON  
WINDOW:PRESS[2]  
CAPTION:PRESS[3]  
Q1 A1 2HF S

Position the cursor to MEMORY by pressing the  $\diamond$  or  $\nabla$  button.

MEMORY:FRAME/field

Press the  $\diamond$  or  $\nabla$  button until MEMORY appears.

4 Select the desired memory mode by pressing the  $\diamond$  or  $\nabla$  button.

LAYOUTSETUP COLOR:nan  
/COL/LAY/PRN/IN/OUT/  
MEMORY:PIX:FRAME/field  
SEPARATE:OFFON  
WINDOW:PRESS[2]  
CAPTION:PRESS[3]  
Q1 A1 2HF S

Switch the desired memory mode to green by pressing the  $\diamond$  or  $\nabla$  button.

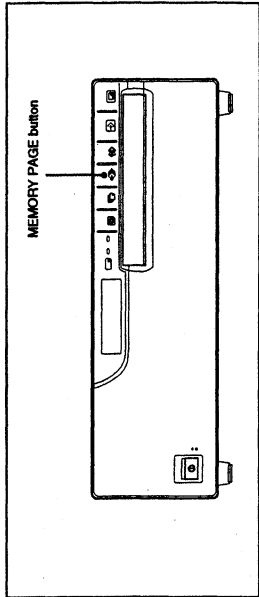
MEMORY:FRAME/field

Display the desired memory mode in capital letters by pressing the  $\diamond$  or  $\nabla$  button.

Frame: We recommend that, whenever possible, you print in this mode.  
Field: Select this mode to reduce blurring when you print a quickly moving image.

5 Press the MENU button.  
The regular screen appears.

Selecting a memory page



To select a memory page, press the MEMORY PAGE button.

Q1 C S

Q1 1 S

Press the MEMORY PAGE button as many times as the necessary until the desired memory page appears.

Note

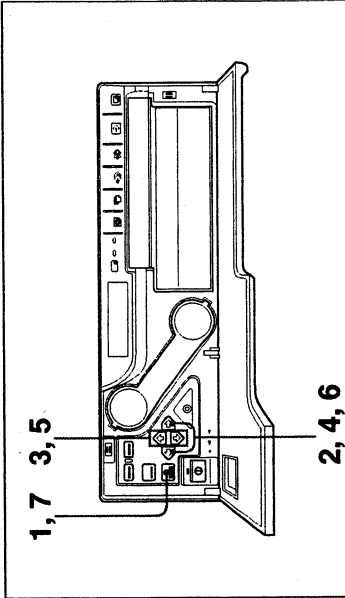
The memory page whose image is being printed is blinking on the video monitor screen. Even if you select this blinking page, you cannot capture the image in this page.

Making Variations of Printouts (continued)

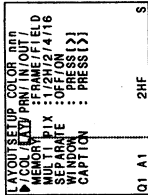
Making a Printout of Multiple Different Reduced Images

- You can store multiple images into a memory page and make a printout with those reduced images. This section explains how to make a printout with multiple reduced images.
- A printout having multiple reduced images is done by following the procedure below.
- Determining the number of reduced images. (on this page)
  - Selecting how to capture the images into memory (page 36)
  - Setting the printer application mode to STANDARD (page 25)

Selecting the number of reduced images to be captured in memory



- 1 Press the MENU button.  
The menu just before opened appears.
- 2 Select LAY by pressing the ◀ or ▶ button.



By switching LAY to green by pressing the ◀ or ▶ button, LAYOUT SETUP appears.



Display LAY in capital letters by pressing the ◀ or ▶ button.

- 3 Select MULTI PIX by pressing the ◀ or ▶ button.



Press the ◀ or ▶ button until MULTI PIX appears.

Position the cursor to MULTI PIX by pressing the ◀ or ▶ button.

- 4 Select the desired type of reduced-images printout by pressing the ◀ or ▶ button.



Display the desired type of reduced-image printout by pressing the ◀ or ▶ button.

Switch the desired type of reduced-image printout to green by pressing the ◀ or ▶ button.

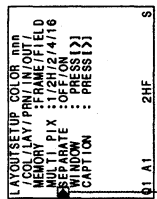
| Displayed type | Number of reduced images                                              |
|----------------|-----------------------------------------------------------------------|
| 1              | 1 (Full-size image)                                                   |
| 2H             | 2 (Two reduced images around the center of the screen)                |
| 2              | 2 (Two reduced images of the whole screen) (only for UP-2850P/2850MD) |
| 4              | 4 (Four reduced images)                                               |
| 16             | 16 (16 reduced images)                                                |

To make a printout of reduced images with white borders, go to step 5.  
To make a printout without white borders, skip step 5 and go to step 7.

Continue to next page →

Making Variations of Printouts (continued)

- 5 Select SEPARATE by pressing the  $\diamond$  or  $\nabla$  button.



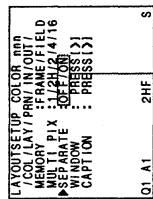
Position the cursor to SEPARATE by pressing the  $\diamond$  or  $\nabla$  button.

Note

In the LAYOUT SETUP menu, if items such as MEMORY and SEPARATE are not effective, the application mode other than the STANDARD mode is selected. In such a case, select the STANDARD mode in the SYSTEM SETUP menu first.

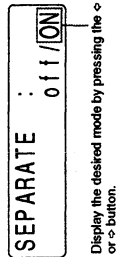
- 6 Select whether the images are printed with or without white borders by pressing the  $\diamond$  or  $\nabla$  button.

| When you select                 | Settings |
|---------------------------------|----------|
| Printouts without white borders | OFF      |
| Printouts with white borders    | ON       |

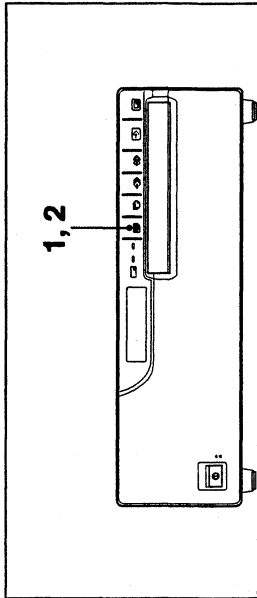


Switch the desired mode to green by pressing the  $\diamond$  or  $\nabla$  button.

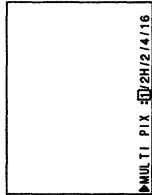
- 7 Press the MENU button.  
The regular screen appears.



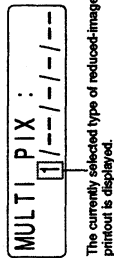
To select the desired type of reduced-image printout using the MULTI PICTURE button  
You can select the number of reduced images using the MULTI PICTURE button on the front panel.



- 1 Press the MULTI PICTURE button.  
The current setting appears. The video monitor screen is reset to the regular screen after a few seconds.



The currently selected type of reduced-image printout is in green.



The currently selected type of reduced-image printout is displayed.

- 2 Press the MULTI PICTURE button until the desired type of reduced-image printout appears.  
Repeatedly pressing the MULTI PICTURE button switches the type of reduced-image printout

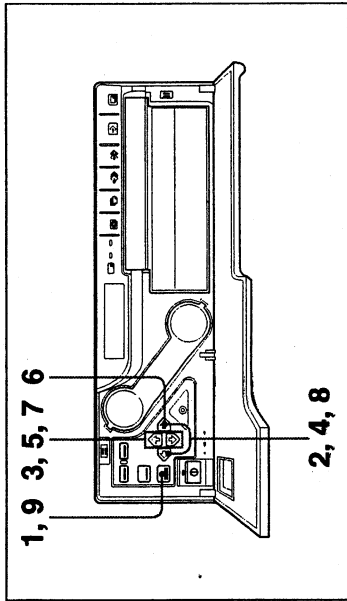
For detailed information on the type of reduced-image printout, see "Selecting the number of reduced images to be captured in memory". (page 32)



## Making Variations of Printouts (continued)

### Selecting how to capture the Images

- You can select how to capture the images by using the **PRINTER SETUP** menu and **FUNCTION SETUP** menu.
- Storing only the image currently displayed on the video monitor screen or storing images sequentially to all reduced-image positions of a memory page at regular intervals.
  - Deciding the image the printer displays on the video monitor screen after capturing the image.



- 1 Press the **MENU** button.  
The menu just before opened appears.
- 2 Select **PRN** by pressing the  $\diamond$  or  $\triangleright$  button.

|                         |  |   |
|-------------------------|--|---|
| PRINTER SETUP COLOR nnn |  | S |
| COL/LAY/PRN/IN/OUT/     |  |   |
| PRINT QTY : 1-91        |  |   |
| INTERVAL : OFF/ON       |  |   |
| GAMMA : NORMAL/H        |  |   |
| SYSTEM : PRESS [X]      |  |   |
| FUNCTION : PRESS [X]    |  |   |
| Q1 A1 2HF               |  |   |

By switching PRN to green by pressing the  $\diamond$  or  $\triangleright$  button, **PRINTER SETUP** appears.

|               |  |
|---------------|--|
| PRINTER SETUP |  |
| /c/1/PRN/i/o/ |  |

Display PRN in capital letters by pressing the  $\diamond$  or  $\triangleright$  button.

- 3 Select **INTERVAL** by pressing the  $\diamond$  or  $\triangleright$  button.

|                         |  |   |
|-------------------------|--|---|
| PRINTER SETUP COLOR nnn |  | S |
| COL/LAY/PRN/IN/OUT/     |  |   |
| PRINT QTY : 1-91        |  |   |
| INTERVAL : OFF/ON       |  |   |
| GAMMA : NORMAL/H        |  |   |
| SYSTEM : PRESS [X]      |  |   |
| FUNCTION : PRESS [X]    |  |   |
| Q1 A1 2HF               |  |   |

|          |        |
|----------|--------|
| INTERVAL |        |
| :        | OFF/ON |

Press the  $\diamond$  or  $\triangleright$  button until **INTERVAL** appears.

Position the cursor to **INTERVAL** by pressing the  $\diamond$  or  $\triangleright$  button.

- 4 Select the desired method for storing images by pressing the  $\diamond$  or  $\triangleright$  button.

|                                                                                                                              |  |         |
|------------------------------------------------------------------------------------------------------------------------------|--|---------|
| When you select                                                                                                              |  | Setting |
| To capture only the image currently displayed on the video monitor screen by pressing the <b>CAPTURE</b> button.             |  | OFF     |
| To capture images sequentially to all positions of a memory page at regular intervals by pressing the <b>CAPTURE</b> button. |  | ON      |

|                         |  |   |
|-------------------------|--|---|
| PRINTER SETUP COLOR nnn |  | S |
| COL/LAY/PRN/IN/OUT/     |  |   |
| PRINT QTY : 1-91        |  |   |
| INTERVAL : OFF/ON       |  |   |
| GAMMA : NORMAL/H        |  |   |
| SYSTEM : PRESS [X]      |  |   |
| FUNCTION : PRESS [X]    |  |   |
| Q1 A1 2HF               |  |   |

|          |        |
|----------|--------|
| INTERVAL |        |
| :        | OFF/ON |

Display the desired mode in capital letters by pressing the  $\diamond$  or  $\triangleright$  button.

Switch the desired mode to green by pressing the  $\diamond$  or  $\triangleright$  button.

- 5 Select **FUNCTION** by pressing the  $\diamond$  or  $\triangleright$  button.

|                         |  |   |
|-------------------------|--|---|
| PRINTER SETUP COLOR nnn |  | S |
| COL/LAY/PRN/IN/OUT/     |  |   |
| PRINT QTY : 1-91        |  |   |
| INTERVAL : OFF/ON       |  |   |
| GAMMA : NORMAL/H        |  |   |
| SYSTEM : PRESS [X]      |  |   |
| FUNCTION : PRESS [X]    |  |   |
| Q1 A1 2HF               |  |   |

|          |           |
|----------|-----------|
| FUNCTION |           |
| :        | PRESS [X] |

Press the  $\diamond$  or  $\triangleright$  button until **FUNCTION** appears.

Position the cursor to **FUNCTION** by pressing the  $\diamond$  or  $\triangleright$  button.

Continue to next page  $\rightarrow$

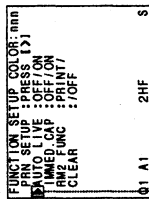
Making Variations of Printouts (continued)

6 Press the  $\Rightarrow$  button.

The FUNCTION SETUP menu appears.



7 Select AUTO LIVE by pressing the  $\diamond$  or  $\nabla$  button.

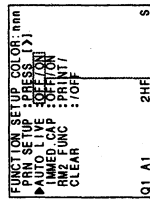


Press the  $\diamond$  or  $\nabla$  button until AUTO LIVE appears.

Position the cursor to AUTO LIVE by pressing the  $\diamond$  or  $\nabla$  button.

8 Select which the image appears on the video monitor after the image is captured by pressing the  $\Leftarrow$  or  $\Rightarrow$  button.

| When you select                                                                                                                                                           | Setting |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| The image captured in memory appears just after the printer captures the image, and the memory image remains on the video monitor screen.                                 | OFF     |
| The image stored in memory appears just after the printer captures the image, then after a few seconds, the source memory appears, whenever you press the CAPTURE button. | ON      |



Switch the desired mode to green by pressing the  $\Leftarrow$  or  $\Rightarrow$  button.

9 Press the MENU button.  
The regular screen appears.

To return to the PRINTER SETUP menu

In step 9, position the cursor to PRN SETUP and press the  $\Rightarrow$  button.  
The PRINTER SETUP menu appears again.

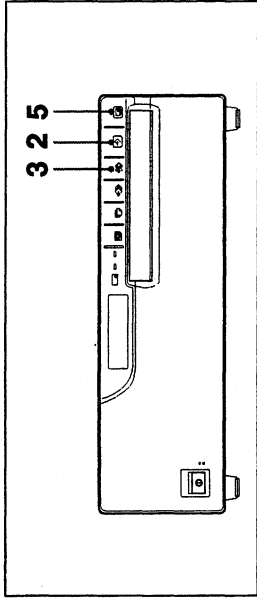
Making a Printout with Multiple Reduced Images

This subsection explains how to make printouts of multiple reduced images taking, as an example, the making of a printout of four reduced images.

Before making the printout of four reduced images

- Select the type of the four-reduced image and whether to put the white borders  $\nabla$  (see page 32)
- Select the appropriate memory page. (see page 31)
- Set how to capture images into the memory page and select which image will appear after the image has been stored into memory, the memory image or source image. (see page 36)

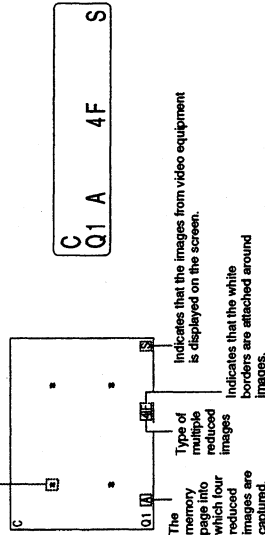
a) When the type of four reduced images or 16 reduced images is selected, the frame mode is automatically selected.



1 Start the video source.

This operation is done using the controls of the video equipment acting as the source.

Blinks green to indicate that an image will be captured here.

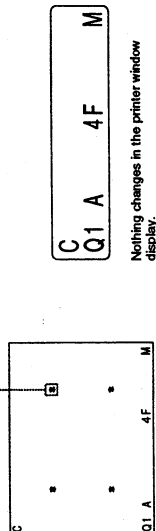


Continue to next page  $\rightarrow$

## Making Variations of Printouts (continued)

- 2** Press the CAPTURE button at the instant the image you want to print appears on the screen.  
The image has been stored to the star (\*) that blinked green on the video monitor screen or the position number displayed on the printer window display in step 1.  
The green blinking star (referred to as the cursor) on the monitor moves to the next position and the number the printer window display advances by 1.

The blinking green cursor moves.



At this time, the image captured in memory is displayed on the video monitor screen. However, the image to be displayed after a few seconds depends on the setting of AUTO LIVE in the FUNCTION SETUP menu. (see page 38)

Go to step 3 when the memory image remains on the video monitor screen.  
Go to step 4 when the source image is displayed.

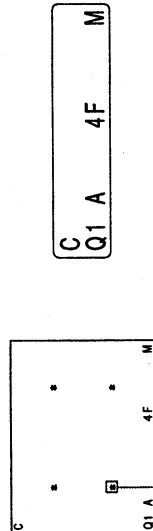
- 3** Press the SOURCE/MEMORY button.  
The source image appears on the video monitor screen.

- 4** Repeat steps 2 and 3 until you have captured four images when the memory image remains on the video monitor screen.  
Repeat step 2 until you have captured four images when the source image appears on the video monitor screen.

### To replace a captured image

Example: When you want to change the image stored to the third position.

- ① Select the third position where there is the image which you want to replace by pressing the  $\Delta$ ,  $\nabla$ ,  $\leftrightarrow$  or  $\leftarrow$  button.  
Pressing the  $\Delta$ ,  $\nabla$ ,  $\leftrightarrow$  or  $\leftarrow$  button moves the cursor one position vertically or horizontally.



Press the  $\Delta$ ,  $\nabla$ ,  $\leftrightarrow$  or  $\leftarrow$  button until the third cursor blinks green.

- ② Start the video source.  
If the memory image is displayed, press the SOURCE/MEMORY button to display the source image.

- ③ Press the CAPTURE button at the instant the image you want to print appears.

The previously stored image is replaced with the newly stored image.

### To skip a previously captured image

When an image has already been captured, the previously captured image can be replaced by pressing the CAPTURE button.  
Skip the corresponding image by pressing the  $\Delta$ ,  $\nabla$ ,  $\leftrightarrow$  or  $\leftarrow$  button.

### To capture images automatically

Images can be stored in all of the memory pages according to setting made for INTERVAL of the PRINTER SETUP menu to ON. (see page 36)

- 5** Press the PRINT button.  
The four reduced images are printed on one sheet of paper.

## Making a printout with an insert

You can make printouts with an insert which is reduced image.

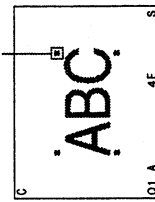
Example: To make a printout with one of four reduced images inserted.  
The operation to make a printout with one of 16 reduced images is the same.

- 1** Display the full-size image stored in memory. (Follow steps 1 to 3 of "Making Full-Size Printouts" on page 16.)  
**2** Set the multiple reduced image type to 4 (without white borders).  
(See "Selecting the number of reduced images to be captured in memory" on page 32.)

- 3** Capture the image to be inserted.

- ① Select the position where a reduced image is to be inserted by pressing the  $\Delta$ ,  $\nabla$ ,  $\leftrightarrow$  or  $\leftarrow$  button.

Move the green cursor to the position where the reduced image is inserted.



- ② Press the CAPTURE button at the instant the image you want to insert appears.

The image is captured to the position selected in step ①.

- 4** Press the MULTI PICTURE button.

The full-size image with an insert appears on the video monitor.

- 5** Press the PRINT button.

The image with an insert is printed.

## Making Variations of Printouts (continued)

### Making Printouts for Stickers

The unit supports application modes such as STICK DUP or STICK DIF that allows you to make a printout for a sticker.

- STICK DUP application mode allows you to make a printout with four or 16 identical reduced images.
- STICK DIF application mode allows you to make a printout with four or 16 different reduced images.

For details of how to select the STICK DUP or STICK DIF application mode, see "Selecting the Printer Application Mode" on page 25.

Also, you have to use the following ink ribbon cartridge and paper for stickers

- UPC-20S16E print pack for sticker with 16 reduced images
  - UPC-20S04E print pack for sticker with four reduced images
- For detailed information on the print pack, see "Ink Ribbon Cartridge and Paper" on page 99.

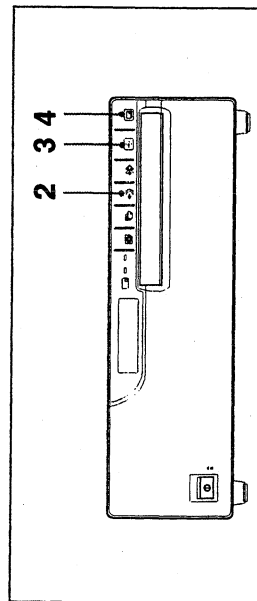
#### Before making a printout for a sticker

- Select either the STICK DUP or STICK DIF application mode (see page 25)
  - Select the type of the multiple reduced images, that is 4 or 16 (see page 32). The procedure for selecting the number of reduced images is the same as that in standard application mode.
- However, in the LAYOUT SETUP menu it is different. You cannot select the MEMORY mode, and SEPARATE is automatically set and fixed to the one with white borders.
- Select the appropriate memory page. (see page 31)

#### About the memory mode

You are not allowed to select the memory mode. The memory mode is automatically set to either frame or field.

To make a printout for a sticker, proceed as follows.



- 1 Start the video source.

This operation is done using the controls of the video equipment acting as the source.

- 2 Select the memory page by pressing the MEMORY PAGE button.

- 3 Capture the image in memory.

When STICK DIF 4 or STICK DIF 16 is selected: Press the CAPTURE button at the instant the image you want to print appears on the screen.

Repeatedly capture the remaining images by pressing the CAPTURE button.

When STICK DUP 4 or STICK DUP 16 is selected: Press the CAPTURE button at the instant the image you want to print appears on the screen. The full-size memory image is displayed on the video monitor screen. Four or 16 reduced images will be printed on one sheet of paper.

- 4 Press the PRINT button.

The multiple reduced images are printed on one sheet of sticker paper.

### Making Printouts for Identification Photographs

The unit supports the application modes such as FLEX IPP and FIX IPP that allow you to make a printout for identification photographs.

- FLEX IPP application mode allows you to make a printout with identical images of the desired size. The number of identical images is automatically calculated according to the size that you have set.
- FIXED IPP application mode allows you to make a printout with a full-size image, or identical multiple reduced images.<sup>a)</sup>

a) The number of reduced images depends on your TV system. (see page 49)

#### About printing pack and paper tray

To make printouts for identification photographs in FILL IPP or FIXED IPP mode, it is recommended to use the UPC-2040A Self-Laminating Color Printing Pack (not supplied) specially designed for this mode. The printout of this type paper is well preserved.

Also, the paper size of this type is a little larger than that of others. Thus, the supplied paper tray is too small to load paper.

The UPA-2002 (not supplied) is required.  
For detailed information, contact your Sony dealer.

#### Making printouts for identification photographs of a desired size

The FLEX IPP application mode allows you to select the size of one image. The number of images in a single printout depends on the set size.

This section explains how to set the size and register it to the LOAD SIZE number.

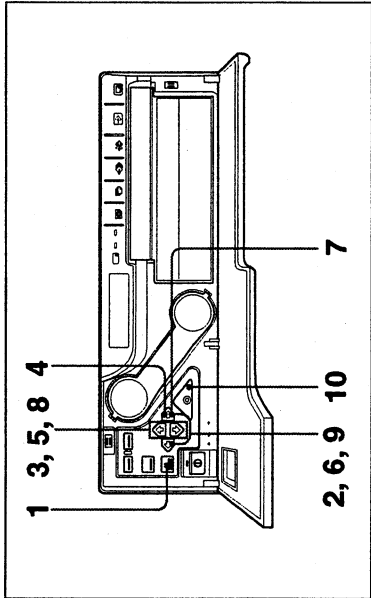
Continue to next page →

### Making Variations of Printouts (continued)

#### ■ To decide the size

The sizes can be registered as LOAD SIZE number 1, 2 and 3. The printer retains these sizes even if you turn off the printer power. Once you have set the typical size of the photograph, you can make the identification photograph with the desired size very easily.

**Before starting**  
Set the application mode to FLEX IPP. (see page 25)



- 1** Press the MENU button.  
The menu just before opened appears.
- 2** Select LAY by pressing the ◀ or ▶ button.

|                                 |    |   |
|---------------------------------|----|---|
| LAYOUT SETUP COLOR : nnn        |    |   |
| ▶ / COL. LAY / PRN / IN / OUT / |    |   |
| MULTI PIX : 11/2H/2/4/16        |    |   |
| SEPARATE : OFF/ON               |    |   |
| WINDOW : PRESS {>}              |    |   |
| CAPTION : PRESS {>}             |    |   |
| Q1 A1                           | 2H | S |

LAYOUT SETUP  
/ c / LAY / p / i / o /

By switching LAY to green by pressing the ◀ or ▶ button, LAYOUT SETUP appears.

Display LAY in capital letters by pressing the ◀ or ▶ button.

- 3** Select WINDOW by pressing the ◀ or ▶ button.

|                                 |     |   |
|---------------------------------|-----|---|
| LAYOUT SETUP COLOR : nnn        |     |   |
| ▶ / COL. LAY / PRN / IN / OUT / |     |   |
| MULTI PIX : 11/2H/2/4/16        |     |   |
| SEPARATE : OFF/ON               |     |   |
| WINDOW : PRESS {>}              |     |   |
| CAPTION : PRESS {>}             |     |   |
| Q1 A1                           | 2*2 | S |

WINDOW  
: PRESS {>}

Press the ◀ or ▶ button until WINDOW appears.

Position the cursor to WINDOW by pressing the ◀ or ▶ button.

- 4** Press the ▶ button.  
The WINDOW SETUP menu appears.

|                           |     |  |
|---------------------------|-----|--|
| WINDOW SETUP COLOR : nnn  |     |  |
| ▶ / LAY SETUP : PRESS {>} |     |  |
| LOAD SIZE : 11/2/3        |     |  |
| H WIDTH : 1045mm          |     |  |
| V WIDTH : 1045mm          |     |  |
| SAVE SIZE : 11/2/3 (EXEC) |     |  |
| Q1 A                      | 2*2 |  |

WINDOW SETUP

- 5** Select LOAD SIZE by pressing the ◀ or ▶ button.

|                           |     |   |
|---------------------------|-----|---|
| WINDOW SETUP COLOR : nnn  |     |   |
| ▶ / LAY SETUP : PRESS {>} |     |   |
| LOAD SIZE : 11/2/3        |     |   |
| H WIDTH : 1045mm          |     |   |
| V WIDTH : 1045mm          |     |   |
| SAVE SIZE : 11/2/3 (EXEC) |     |   |
| Q1 A                      | 2*2 | S |

LOAD SIZE :  
1 / - / -

Press the ◀ or ▶ button until LOAD SIZE appears.

Position the cursor to LOAD SIZE by pressing the ◀ or ▶ button.

- 6** Select the desired LOAD SIZE number to be registered or modified by pressing the ◀ or ▶ button.

|                           |     |   |
|---------------------------|-----|---|
| WINDOW SETUP COLOR : nnn  |     |   |
| ▶ / LAY SETUP : PRESS {>} |     |   |
| LOAD SIZE : 11/2/3        |     |   |
| H WIDTH : 1045mm          |     |   |
| V WIDTH : 1045mm          |     |   |
| SAVE SIZE : 11/2/3 (EXEC) |     |   |
| Q1 A                      | 2*2 | S |

LOAD SIZE :  
1 / - / -

Display the desired LOAD SIZE number by pressing the ◀ or ▶ button.

Switch the desired LOAD SIZE number to green by pressing the ◀ or ▶ button.

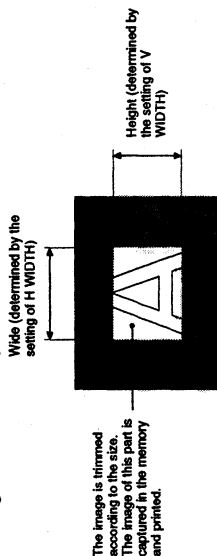
When modifying, you can preserve the original settings. (See "To retain the originally set value" on page 47.)

Continue to next page →

Making Variations of Printouts (continued)

7 Decide the size.

Display the source image on the video monitor and decide the size as watching the image trimmed according to the size.



- ① Select the direction to be adjusted by pressing the  $\diamond$  or  $\nabla$  button.
- ② Adjust the size of the direction selected in ① by pressing the  $\diamond$  or  $\nabla$  button.

① Display the direction to be adjusted by pressing the  $\diamond$  or  $\nabla$  button.

WINDOW SETUP COLOR: nnn  
LAY SETUP :PRESS(X)  
LOAD SIZE :11/2/3  
H WIDTH :035mm  
V WIDTH :045mm  
SAVE SIZE :11/2/3[EXEC]

Q1 A 2x2

H WIDTH : 35 mm

V WIDTH : 45 mm

③ Then display the desired size by pressing the  $\diamond$  or  $\nabla$  button.

- ① Position the source on the direction to be adjusted by pressing the  $\diamond$  or  $\nabla$  button.
- ② adjust the size by pressing the  $\diamond$  or  $\nabla$  button.

The following table shows examples of the size and the number of images in a single printout.

| Size (unit: mm) (w x h) | Number of Images |
|-------------------------|------------------|
| 35 x 45                 | 4                |
| 45 x 35                 | 3                |
| 51 x 51                 | 2                |

8 Select SAVE SIZE by pressing the  $\diamond$  or  $\nabla$  button.

WINDOW SETUP COLOR: nnn  
LAY SETUP :PRESS(X)  
LOAD SIZE :11/2/3  
H WIDTH :035mm  
V WIDTH :045mm  
SAVE SIZE :11/2/3[EXEC]

Q1 A 2x2

SAVE SIZE : 1/-/-[EXEC]

Press the  $\diamond$  or  $\nabla$  button until SAVE SIZE appears. Position the cursor to SAVE SIZE by pressing the  $\diamond$  or  $\nabla$  button.

9 Select the SAVE SIZE number to which new settings are to be stored by pressing the  $\diamond$  or  $\nabla$  button.

WINDOW SETUP COLOR: nnn  
LAY SETUP :PRESS(X)  
LOAD SIZE :11/2/3  
H WIDTH :035mm  
V WIDTH :045mm  
SAVE SIZE :11/2/3[EXEC]

Q1 A 2x2

SAVE SIZE : -12/-[EXEC]

Display the desired SAVE SIZE number by pressing the  $\diamond$  or  $\nabla$  button.

Switch the desired SAVE SIZE number to green by pressing the  $\diamond$  or  $\nabla$  button.

To retain the originally set value

Select a SAVE SIZE number which is different from the LOAD SIZE number selected in step 6.

10 Press the EXEC button.

The set size is registered to the SAVE SIZE number selected in step 9.

To return to the previous screen

Select the LAYOUT SETUP by pressing the  $\diamond$  or  $\nabla$  button, then press the  $\diamond$  or  $\nabla$  button.

The LAYOUT SETUP menu appears.

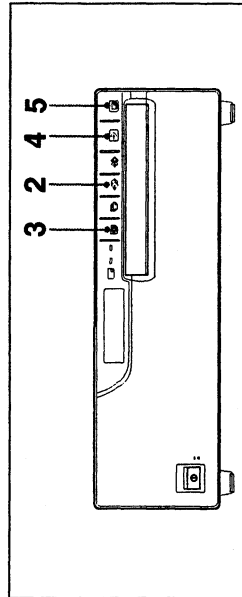
To return to the regular screen

Press the MENU button.

■ To make a printout with identical images of the desired size

Before making printouts with identical images of the desired size

- Select the application mode FLEX IPP. (page 25)
- Decide the size of one image. (page 44)
- Prepare the UPC-2040A Self-Laminating Printing Pack



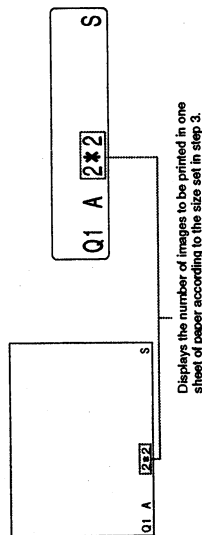
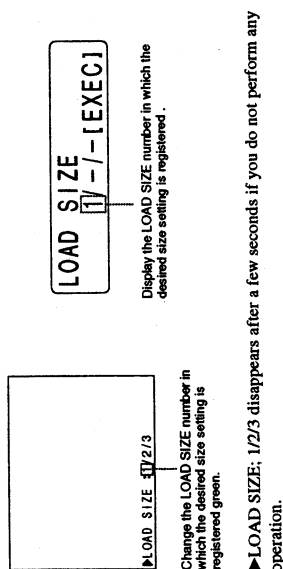
1 Start the video source.

This operation is done using the controls of the video equipment acting as the source.

Continue to next page  $\rightarrow$

## Making Variations of Printouts (continued)

- 2 Select the memory page by pressing the MEMORY PAGE button.
- 3 Load the desired size by pressing the MULTI PICTURE button.  
By pressing the MULTI PICTURE button ►LOAD SIZE: 1/2/3 appears. Each time you press the MULTI PICTURE button, the LOAD SIZE number to be loaded changes.



**When you want to make a printout of images of the different size**  
Set the size in step 3 instead of loading the LOAD SIZE number. (See "To decide the size" on page 44.)

- 4 Press the CAPTURE button at the instant the image you want to print appears on the screen.  
The number of images corresponding to the selected size are copied and captured in the selected memory page.
- To replace a stored image**
  - ① When the memory image remains on the video monitor screen, press the SOURCE/MEMORY button to display the source image.
  - ② Press the CAPTURE button at the instant the image you want to print appears.  
The previously copied identical images are replaced with the newly captured images.
- 5 Press the PRINT button.  
The identical reduced images of the same size are printed in a single printout.

## Making printouts for identification photograph with the fixed-size image

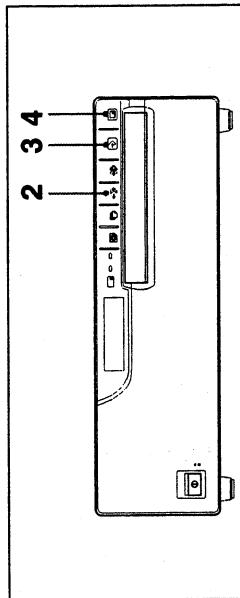
The printer allows you to make a printout with a full-size image, identical multiple reduced images in FIXED IPP application mode.

You can select the number of identical reduced images on the menu on the LAYOUT SETUP menu, but the number of reduced images depends on your TV system.

- PAL TV system: FIXED IPP 1/4/9/16 are selectable.
- NTSC TV system: FIXED IPP 1/4/16 are selectable.

**Before making printouts for identification photograph with the fixed-size image**

- Select the application mode FIXED IPP. (page 25)
- Decide the number of images. (page 32)
- Prepare the UPC-2040A Self-Laminating Printing Pack



- 1 Start the video source.  
This operation is done using the controls of the video equipment acting as the source.
- 2 Select the memory page by pressing the MEMORY PAGE button.
- 3 Press the CAPTURE button at the instant the image you want to print appears on the screen.

### To replace a stored image

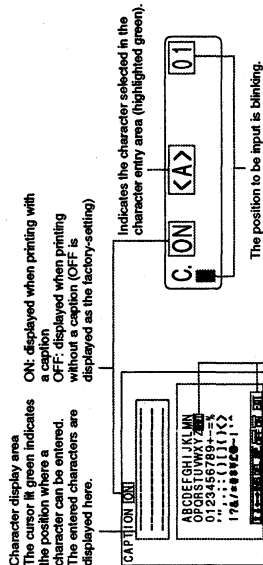
- ① When the memory image remains on the video monitor screen, press the SOURCE/MEMORY button to display the source image.
- ② Press the CAPTURE button at the instant the image you want to print appears.  
The previously copied identical images are replaced with the newly captured images.
- 4 Press the PRINT button.  
The identical reduced images of the same size are printed in a single printout.

# Making Printouts With a Caption

A caption, such as data or comments, can be added to a printout below the image. You can input up to 48 characters.

## About the CAPTION menu

A caption is entered from the CAPTION menu. You can input caption in any printer application mode and make a printout with a caption. A brief explanation of each item of the CAPTION menu is given below.



## Symbols and words can be used to enter a caption

| Monitor display  | Function                                                                                                  |
|------------------|-----------------------------------------------------------------------------------------------------------|
| ins              | Inserts one character without erasing the highlighted character.                                          |
| del              | Deletes a highlighted character and characters back by one.                                               |
| spc              | Puts one space at the position of the highlighted character as erasing that character. One space is left. |
| off              | Selects to print without a caption.                                                                       |
| on               | Selects to print with a caption.                                                                          |
| exit             | Returns from the CAPTION menu to LAYOUT SETUP menu.                                                       |
| Sh <sup>a)</sup> | Selects either capital letters or lower-case letters.                                                     |

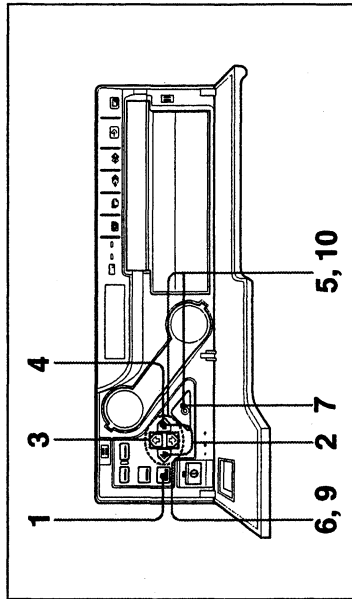
a) By highlighting Sh green and pressing the EXEC button, capital letters are changed to lower-case letters, or lower-case letters are changed to capital letters in the character entry area.

## Entering a Caption

Enter a caption as follows. The setting remains effective until you enter a new setting - even if you turn the power off.

### Notes

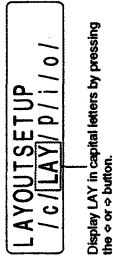
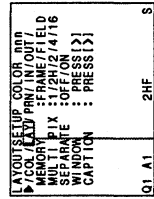
- If you turn off the power of the printer without returning to the LAYOUT SETUP menu or regular screen, the entered characters are cleared.
- During printing, you cannot enter or edit caption in the CAPTION menu.



1 Press the MENU button.

The menu just before opened appears.

2 Select LAY by pressing the  $\diamond$  or  $\triangle$  button.



Display LAY in capital letters by pressing the  $\diamond$  or  $\triangle$  button.

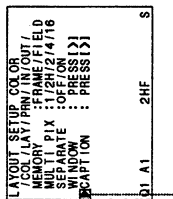
By switching LAY to green by pressing the  $\diamond$  or  $\triangle$  button, LAYOUT SETUP appears.

Continue to next page  $\rightarrow$



## Making Printouts With a Caption (continued)

- 3 Select CAPTION by pressing the  $\phi$  or  $\psi$  button.



Press the  $\phi$  or  $\psi$  button until CAPTION appears.

Position the cursor to CAPTION by pressing the  $\phi$  or  $\psi$  button.

- 4 Press the  $\phi$  button.  
The CAPTION menu appears.

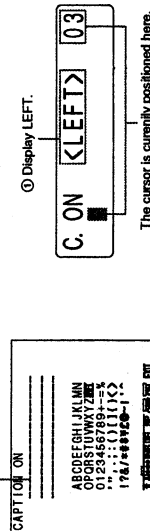
- 5 Position the cursor (the line lit green) to the point where you want to enter the character in the character display area.

### To move the cursor:

- ① Select the arrow corresponding to the direction in which you want to move the green cursor in the character display area, by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.
  - ② Press the EXEC button.
- Each time you press the EXEC button, the cursor moves one position in the designated direction.

Example: Move the cursor to the left by two.

The cursor is currently positioned here.

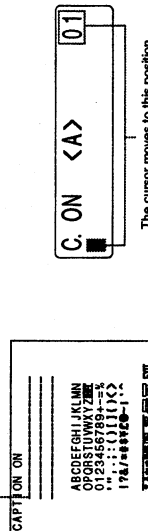


The cursor is currently positioned here.

- ③ Highlight the  $\phi$  button green.

- ④ Press the EXEC button twice.

The cursor moves to this position.

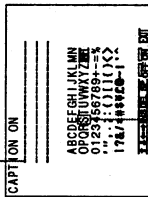


### Note

When OFF is displayed, the CAPTION input mode is set to off. Thus, you cannot add a caption to the printouts. ("Making printouts with a caption" on page 55)

- 6 Select the character you want to enter by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.

Example: To enter S



Display S by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.

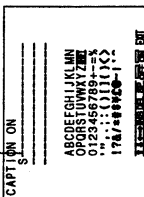


Highlight S green by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.

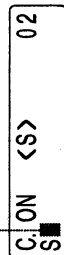
- 7 Press the EXEC button.

The character selected in step 5 appears at the point where the green cursor is positioned in the character display area, after which the cursor moves to the next position.

The cursor moves to this position.

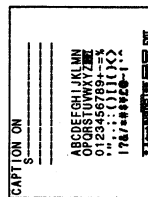


The cursor moves to this position.



### When you enter the wrong character

- ① Select  $\phi$  by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button, then press the EXEC button. The cursor moves back by one and the character entered in step 6 is highlighted green.
- ② Select DEL by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.



Display DEL by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.

Switch DEL to green by pressing the  $\phi$ ,  $\psi$ ,  $\phi$  or  $\psi$  button.

- ③ Press the EXEC button.

The character selected in ① is deleted.

When the character to be deleted is placed among entered characters, the characters back by one.

### Note

A dark change of the monitor screen may occur after the EXEC button is pressed.

- 8 Repeat steps 5, 6 and 7 to enter the remaining characters of the caption.

Continue to next page →

## Making Printouts With a Caption (continued)

### To enter a space

- ① Position the green cursor to the point where you want to enter a space by performing the operations explained in step 5.
  - ② Select SPC by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.
  - ③ Press the EXEC button.
- A single space is entered and the green cursor moves to the next position. If there is a character at the position where the space is entered, that character is deleted and a single space is left.

### To replace a previously entered character without changing the number of characters

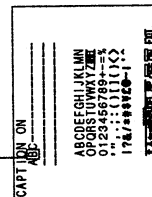
- You can replace a previously entered character with a new one.
- ① Position the green cursor to the character to be replaced by performing the operations explained in step 5.
  - ② Overwrite the invalid character with the correct character by performing the operations explained in steps 6 and 7.
- The previously entered character is replaced with the new one.

### To add characters midway

- ① Position the cursor to the position where a character is to be added by performing the operations explained in step 5.

Example: To Add a character between B and C

- ① Move the cursor to B (B is highlighted green).



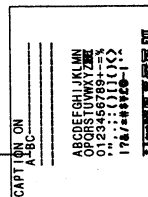
- ② B blinks when the cursor comes to B. ③ Display INS.



- ② Switch INS to green

- ③ Select INS by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.

Cursor (lit green)



- ③ Press the EXEC button.

A single space is inserted between B and C and the green cursor is positioned at the space.

### Note

A dark change of the monitor screen may occur after the EXEC button is pressed.

- ④ Enter the character to be added.

- 9 Select EXIT by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.

- 10 Press the EXEC button.

The entered characters are stored in the memory. The LAYOUT SETUP menu appears.

### To return to the regular screen

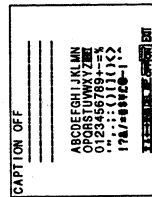
Press the MENU button in step 9. The entered characters are stored in the memory and the regular screen appears.

### Making printouts with a caption

- 1 Display the CAPTION menu.

For details of how to display the CAPTION menu, see steps 1 to 4 in "Entering a Caption".

- 2 Select on by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.



Switch on to green by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.

- 3 Press the EXEC button.

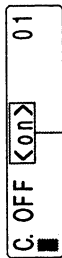
- 4 Select EXIT by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.

- 5 Press the EXEC button.

After this, all printouts are made with a caption.

### To make a printout without a caption

Select off in step 2.



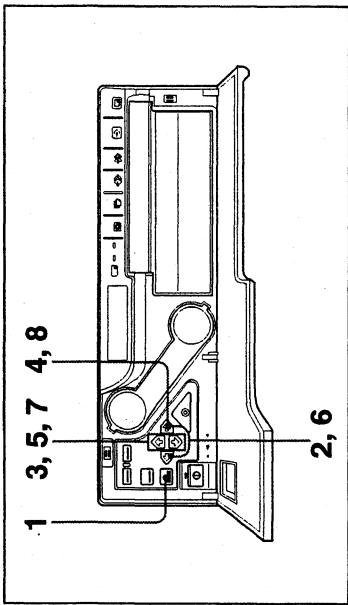
Display on by pressing the  $\diamond$ ,  $\nabla$ ,  $\diamond$  or  $\nabla$  button.

# Deleting the Images Stored to Memory Pages

You can delete images captured to memory pages, form either all of memory pages or a single memory page, by using the CLEAR button.

Whether images of all memory pages or single memory page are deleted depends on the setting of CLEAR on the FUNCTION SETUP menu.

## Setting the Function of the CLEAR Button



- 1 Press the MENU button.  
The menu just before opened appears.
- 2 Select PRN by pressing the  $\diamond$  or  $\nabla$  button.

|                         |    |    |     |   |
|-------------------------|----|----|-----|---|
| PRINTER SETUP COLOR nnn | Q1 | A1 | 2HF | S |
| PRINT QTY : 9 11-91     |    |    |     |   |
| INTERVAL : OFF/ON       |    |    |     |   |
| SYSTEM : NORMAL/H       |    |    |     |   |
| FUNCTION : PRESS {}     |    |    |     |   |

By switching PRN to green by pressing the  $\diamond$  or  $\nabla$  button, PRINTER SETUP appears.

- 3 Select FUNCTION by pressing the  $\diamond$  or  $\nabla$  button.

|                          |    |    |     |   |
|--------------------------|----|----|-----|---|
| FUNCTION SETUP COLOR nnn | Q1 | A1 | 2HF | S |
| /COL/LAY/PRN/IN/OUT/     |    |    |     |   |
| PRINT QTY : 9 11-91      |    |    |     |   |
| INTERVAL : OFF/ON        |    |    |     |   |
| SYSTEM : NORMAL/H        |    |    |     |   |
| FUNCTION : PRESS {}      |    |    |     |   |

Position the cursor to FUNCTION by pressing the  $\diamond$  or  $\nabla$  button.

|                     |
|---------------------|
| FUNCTION : PRESS {} |
|---------------------|

Press the  $\diamond$  or  $\nabla$  button until FUNCTION appears.

|               |
|---------------|
| PRINTER SETUP |
| /C/I/PRN/I/O/ |

Display PRN in capital letters by pressing the  $\diamond$  or  $\nabla$  button.

- 4 Press the  $\diamond$  button.  
The FUNCTION SETUP menu appears.
- |                          |    |    |     |   |
|--------------------------|----|----|-----|---|
| FUNCTION SETUP COLOR nnn | Q1 | A1 | 2HF | S |
| PRINT QTY : 9 11-91      |    |    |     |   |
| INTERVAL : OFF/ON        |    |    |     |   |
| SYSTEM : NORMAL/H        |    |    |     |   |
| FUNCTION : PRESS {}      |    |    |     |   |

FUNCTION SETUP
- 5 Select CLEAR by pressing the  $\diamond$  or  $\nabla$  button.
- |                          |    |    |     |   |
|--------------------------|----|----|-----|---|
| FUNCTION SETUP COLOR nnn | Q1 | A1 | 2HF | S |
| PRINT QTY : 9 11-91      |    |    |     |   |
| INTERVAL : OFF/ON        |    |    |     |   |
| SYSTEM : NORMAL/H        |    |    |     |   |
| FUNCTION : PRESS {}      |    |    |     |   |

CLEAR : ALL/page/off

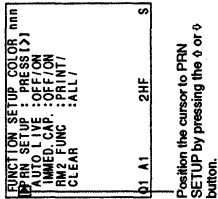
Press the  $\diamond$  or  $\nabla$  button until CLEAR appears.
- 6 Select the function of the CLEAR button by pressing the  $\diamond$  or  $\nabla$  button.
- |                          |    |    |     |   |
|--------------------------|----|----|-----|---|
| FUNCTION SETUP COLOR nnn | Q1 | A1 | 2HF | S |
| PRINT QTY : 9 11-91      |    |    |     |   |
| INTERVAL : OFF/ON        |    |    |     |   |
| SYSTEM : NORMAL/H        |    |    |     |   |
| FUNCTION : PRESS {}      |    |    |     |   |

CLEAR : ALL/page/off

Display the desired function in capital letters by pressing the  $\diamond$  or  $\nabla$  button.
- | Function of the CLEAR button             | Settings |
|------------------------------------------|----------|
| To deactivate the CLEAR button           | OFF      |
| To delete images of all memory pages     | ALL      |
| To delete images of a single memory page | PAGE     |
- Continue to next page  $\rightarrow$

Deleting the Images Stored to Memory Pages (continued)

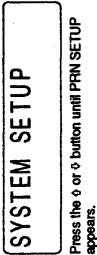
7 Select PRN SETUP by pressing the  $\diamond$  or  $\nabla$  button.



Position the cursor to PRN SETUP by pressing the  $\diamond$  or  $\nabla$  button.

8 Press the  $\diamond$  button.  
The PRINTER SETUP menu appears.  
Once you set the function of the CLEAR button, the CLEAR button functions according to the setting until the function setting is changed.

To return to the regular screen  
Press the MENU button.



Press the  $\diamond$  or  $\nabla$  button until PRN SETUP appears.

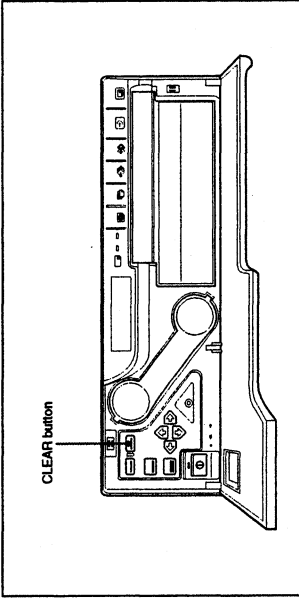
Deleting Images

You can delete images captured to memory pages, either from all memory pages or a single memory page.  
If the source image is displayed on the video monitor, press the CLEAR button once so that the memory image will be displayed.

Deleting Images in all memory pages simultaneously

Before deleting images in all memory pages  
Set CLEAR to ALL on the FUNCTION SETUP menu.

Note  
You cannot restore images once they have been deleted.



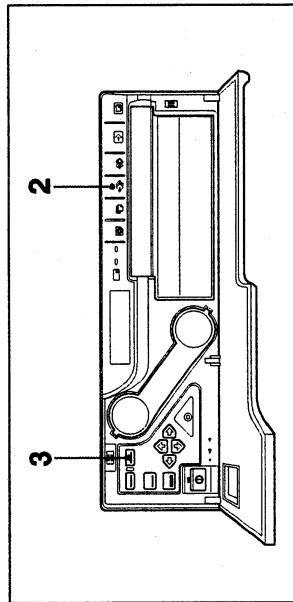
Press the CLEAR button.  
All images stored in the printer are cleared.

## Deleting the Images Stored to Memory Pages (continued)

### Deleting Images in a certain memory page

#### Before deleting Images

Set CLEAR to PAGE on the FUNCTION SETUP menu.

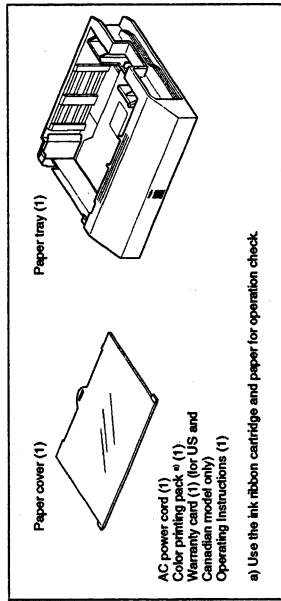


- 1** Press the SOURCE/MEMORY button when the source image is displayed on the video monitor screen.  
The image stored in memory is displayed on the screen.
- 2** Select the memory page from which images are to be deleted by pressing the MEMORY PAGE button.
- 3** Press the CLEAR button.  
The image in the memory page selected in the step 2 is deleted.

## Installation and Adjustment

## Supplied Accessories

The printer is packed together with the following accessories. Check that nothing is missing from your package.

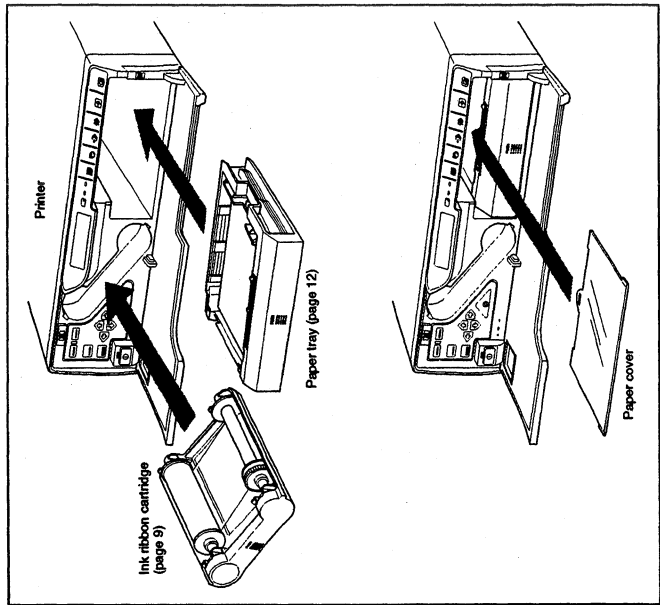


#### Notes

- Retain the original carton and packing materials in case you have to transport the unit in the future.
- Remove the ink ribbon cartridge and paper tray when transporting the printer.

## Assembly

Attach the supplied paper cover, paper tray and ink ribbon cartridge to the printer.  
For details of how to assemble them, see the pages given in parentheses.



## Preparing the Remote Control Unit

The following remote control units (not supplied) allow you to control the printer remotely.

- RM-5500 Remote Control Unit: Used to connect to the REMOTE 1 connector
- RM-91 Remote Control Unit, FS-20/36 Foot switch: Used to connect to the REMOTE 2 connector.

The operations to be remotely controlled by the above remote control units depend on the remote operation settings made with the FUNCTION SETUP menu.  
(“Selecting the Operating Mode for Automatic Printing Capabilities” page 85)

### Using the RM-5500 remote control unit (not supplied)

The RM-5500 Remote Control Unit can be used either as a wireless type or wired type. The buttons on the remote control unit duplicate those on the front panel of the printer. (see “Front” page 108 and “Sub Panel” page 110)  
You can use the remote control unit’s buttons which have the same name as the one on the printer.

### Inserting batteries

Install the batteries in the remote control unit before using it.

- 1 Remove the battery compartment cover.
- 2 Insert the two R6 (size AA) 1.5 V batteries.  
Note the polarity. Be careful to insert the batteries correctly.
- 3 Replace the cover.

### Battery life

The battery life depends on how much you use the remote control unit. Install fresh batteries as soon as you notice the unit’s range becoming shorter.

#### Notes

When using the batteries:

- Remove the batteries from the remote control unit if you do not intend to use it for an extended period of time. The batteries may leak if you leave them in the remote control unit.
- Should the batteries leak, clean the battery case thoroughly with a soft cloth and install fresh batteries.
- Be careful to insert the batteries correctly. Note the polarity, as indicated inside the battery compartment.
- Replace exhausted batteries with fresh ones. Never mix a fresh battery with a used battery or with a different kind of battery.

## Supplied Accessories (continued)

### Using the RM-5500 remote control unit (not supplied) as a wireless unit

When using the remote control unit as a wireless unit, aim the head of the remote control unit at the remote sensor on the printer. With fresh batteries, the range of the remote control unit is about 3 meters.

### Using the RM-91/FS-20/36

The operation of the RM-91 Remote Control Unit (not supplied) and FS-20 Foot Switch (not supplied) can be controlled remotely by sending a pulse signal to the REMOTE 2 connector in addition to the remote operation setting on the FUNCTION SETUP menu.

FS-36 (not supplied) has three switches that have different functions. For detailed information on how to use those switches, refer to the manual supplied with the FS-36.

## Connections

To enable printing, video equipment to act as an input signal source, and a video monitor to display images or menus must be connected. The following diagrams illustrate how to make the input, output and remote control connections. Use this as a guide when connecting the necessary signals to and from the equipment to be used for printing.

### Notes

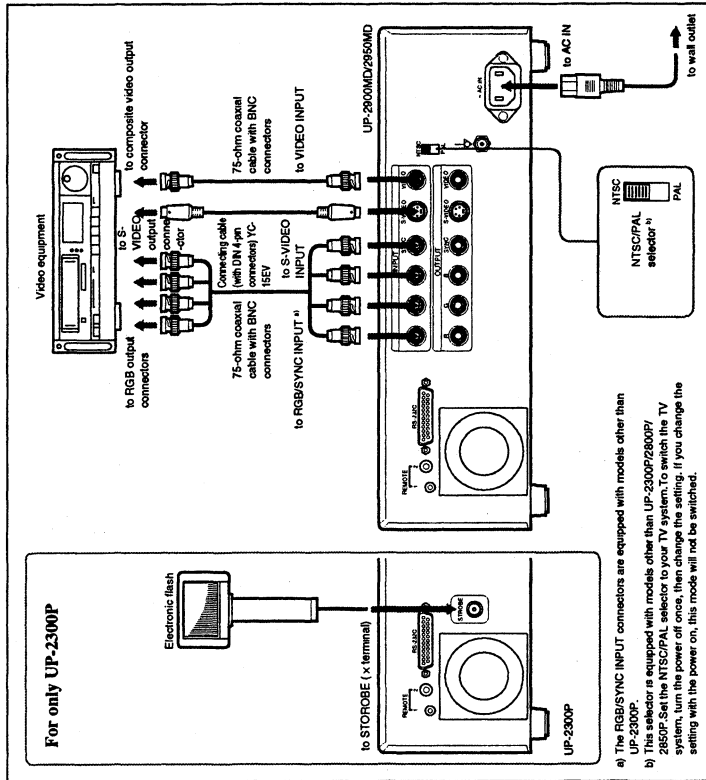
- Turn off the power of each device before attempting to make any connections.
- Connect the AC power cord last.

## Making Connections for Storing Video Images

Connect the video equipment providing the video images to be printed.

Connect the video equipment which will be used in actual printing, using the following diagram as a guide.

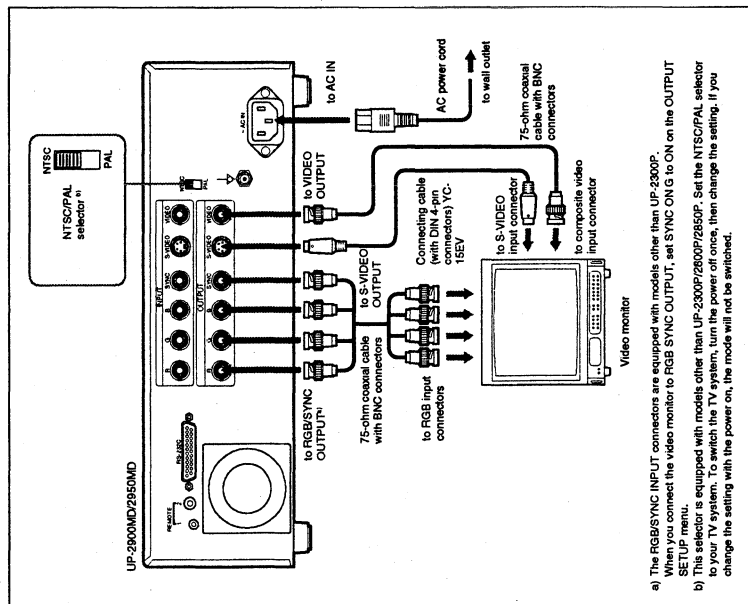
Before connecting the video equipment, see "Important safeguards/notices for use in the medical environment" on page 2.



Connections (continued)

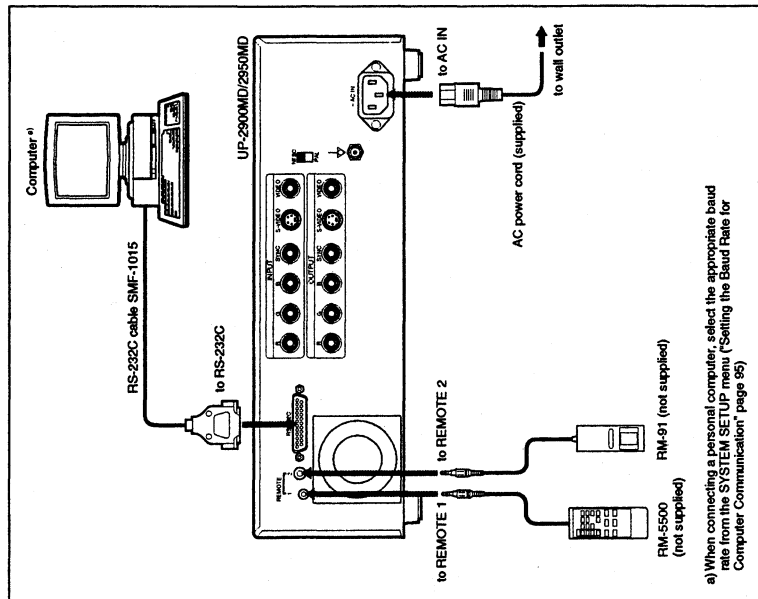
Making Connections for Viewing Images to be Printed

Connect a video monitor to view stored images and to check those to be printed. Connect the necessary video monitor which will be used in actual printing, using the following diagram as a guide. Before connecting the video equipment, see "Important safeguards/notices for use in the medical environment" on page 2.



Making Connections to Enable Remote Control

The printer can be controlled remotely by connecting the RM-5500 Remote Control Unit (not supplied), RM-91 Remote Control Unit (not supplied), the FS-2036 Foot Switch (not supplied) or the personal computer.





## Setting Up the Printer

You can set up the printer specification. Once you have adjusted and stored, the printer operates according to the setting until those values are modified. You can set up the printer according to the intended purpose, connected equipment or your individual preferences.

| Menu               | Functions to be set                                                                                                                                                                                                                                                                                                                                                                                                       | Reference page       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| COLOR ADJUST SETUP | Adjusting the printout color (color intensity and contrast) and sharpness.                                                                                                                                                                                                                                                                                                                                                | 75                   |
| LAYOUT SETUP       | <ul style="list-style-type: none"><li>• Selecting the memory mode</li><li>• Selecting the type of printouts</li><li>• Selecting whether white borders are added to multiple reduced images.</li></ul>                                                                                                                                                                                                                     | 29<br>32<br>34       |
| CAPTION a)         | Entering a caption                                                                                                                                                                                                                                                                                                                                                                                                        | 51                   |
| WINDOW SETUP a)    | <ul style="list-style-type: none"><li>• Setting the size of one image.</li><li>• Changing the printout size/printout area.</li></ul>                                                                                                                                                                                                                                                                                      | 44<br>82             |
| PRINTER SETUP      | <ul style="list-style-type: none"><li>• Setting the print quantity</li><li>• Selecting whether multiple reduced images are automatically stored at regular intervals</li><li>• Adjusting the tone of printout</li></ul>                                                                                                                                                                                                   | 19<br>37<br>80       |
| SYSTEM SETUP b)    | <ul style="list-style-type: none"><li>• Adjusting the brightness of the printer window display.</li><li>• Setting the baud rate for computer communication.</li><li>• Selecting whether the operation and error tones sound.</li><li>• Selecting the application mode (printer operation mode)</li></ul>                                                                                                                  | 91<br>95<br>93<br>25 |
| FUNCTION SETUP     | <ul style="list-style-type: none"><li>• Selecting the image which appears after storing the image into memory, source image or memory image.</li><li>• Selecting the timing of the pulse signal input to the REMOTE 2 connector</li><li>• Selecting operation mode for automatic printing capabilities of remote commanders connected to REMOTE 2 connector.</li><li>• Setting the function of the CLEAR button</li></ul> | 38<br>86<br>87<br>56 |
| INPUT SETUP        | <ul style="list-style-type: none"><li>• Selecting the input signal</li><li>• Compensating for the input signals.</li></ul>                                                                                                                                                                                                                                                                                                | 14<br>69             |
| OUTPUT SETUP       | <ul style="list-style-type: none"><li>• Erasing the screen display.</li><li>• Matching the video monitor color to the printout color.</li><li>• Selecting whether the printer synchronizes with the internal sync signal included in the channel G of the RGB signals.<sup>c)</sup></li></ul>                                                                                                                             | 89<br>72<br>66       |

a) This menu is the sub menu of the LAYOUT SETUP menu.

When the FLEX IPP application mode is selected, this window is used to set the size of the image.

b) This is the sub menu of the PRINTER SETUP menu.

c) This item is available for models other than UP-2300P.

This section explains the following settings and adjustments.

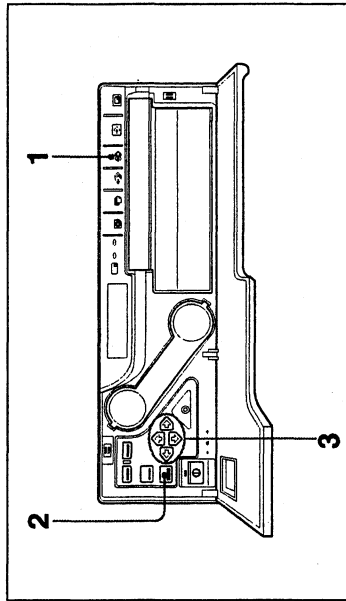
- Compensating for the input signals (on this page)
- Matching the video monitor color to the printout color (page 72)
- Adjusting the printout color and sharpness (page 75)
- Adjusting the tone of the printout (page 80)
- Changing the printout size/printout area (page 82)
- Selecting the operating mode for automatic printing capability (page 85)
- Erasing the screen display (page 89)
- Adjusting the printer window display brightness (page 91)
- Selecting whether to enable the operation and error tones (page 93)
- Setting the baud rate for computer communication (page 95)

## Compensating for the Input Signals

A video image recorded under poor conditions may be of poor color quality. If the signal is an NTSC or PAL composite video signal or separate luminance (Y) and chrominance (C) signals, you can correct the color and level of the input signal to a certain extent on the INPUT SETUP menu.

### Note

You cannot adjust an image once it has been stored in memory. Restore an image after adjustment.

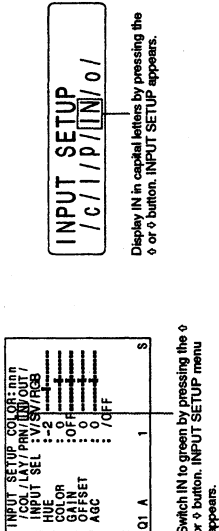


- 1 When the memory image is displayed on the screen, press the SOURCE/MEMORY button.  
The image from the video source appears.

Continue to next page →

Setting Up the Printer (continued)

- 2 Press the MENU button, then select INPUT SETUP menu by pressing the  $\diamond$  or  $\triangle$  button.



- 3 Perform the adjustments as follows.
- 1 Select the adjustment item by pressing the  $\diamond$  or  $\triangle$  button.
  - 2 Perform the adjustment by pressing the  $\diamond$  or  $\triangle$  button.

To adjust the color intensity, hue and contrast

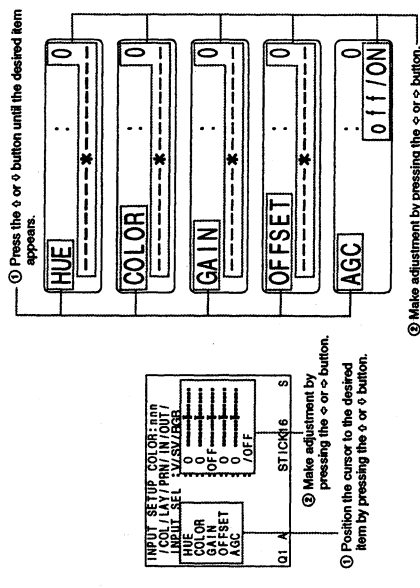
| Adjustment item   | Menu adjustment item | Button and operation result                                   |
|-------------------|----------------------|---------------------------------------------------------------|
| Hue <sup>a)</sup> | HUE $\triangle$      | The hue becomes greenish. The hue becomes purplish.           |
| Color intensity   | COLOR $\triangle$    | The color intensity strengthens. The color intensity weakens. |
|                   | OFF                  | In case of the black and white image                          |
| Contrast          | GAIN                 | The contrast strengthens. The contrast weakens.               |
| Brightness        | OFFSET               | Becomes brighter Becomes darker                               |

a) In PAL mode, no HUE adjustment is provided on the INPUT SETUP menu.  
b) Adjust the color such that skin tones appear natural. For the COLOR and HUE adjustment, you can correct the color intensity and hue of an NTSC composite video signal or a separated luminance (Y) and chrominance (C) signal.

When the printout or monitor image appears blackish or whitish

Adjust the input signal to the optimum level for printing.

| Menu adjustment item         | Selection | When selecting                                                  |
|------------------------------|-----------|-----------------------------------------------------------------|
| AGC (Automatic Gain Control) | ON        | Normal (when the proper signal is input)                        |
|                              | OFF       | When the printout or monitor image appears blackish or whitish. |



- 4 Press the MENU button. The regular screen appears.

## Setting Up the Printer (continued)

### Matching the Video Monitor Color to the Printer Color

To match the color of the monitor image to that of the printout, adjust the monitor and printer colors such that the monitor color is the same as that of the printout.

- The printer outputs either of two kinds of video signals according to the printer settings.
- EE (E to E): Signals are output to the monitor after being processed by the printer's circuitry.
  - THRU (THROUGH): Signals are output to the monitor as is.

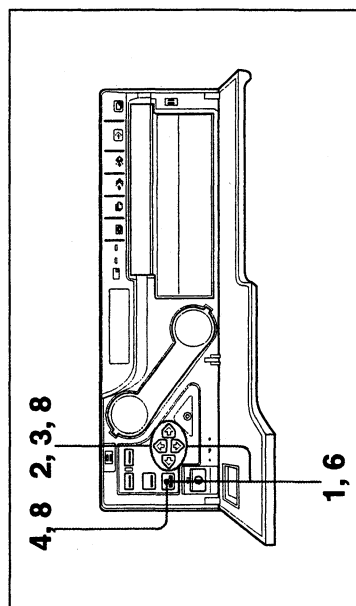
#### Before adjusting the printout color

The monitor color may not be adjusted correctly even if the printer color is correctly adjusted. Check the color of the video monitor before adjusting the printout color. In such a case, use the THRU signal.

After adjusting the color of the video monitor using video monitor controls, adjust the color of the printer's output signal.

#### Note

This adjustment is performed to adjust the color of the printer output signal when the monitor color is unsatisfactory. This adjustment does not affect the printout itself. To adjust the color of the printout, see "Adjusting the Printout Color and Sharpness" on page 75).



- 1 Press the MENU button, then select OUTPUT SETUP menu by pressing the  $\diamond$  or  $\triangleleft$  button.

| OUTPUT SETUP        | COLOR    | ann | S |
|---------------------|----------|-----|---|
| COL/LAY/PRN/IN/OUT/ |          |     |   |
| SOURCE              | :THRU/EE |     |   |
| DISP/ON             | :OFF/ON  |     |   |
| MONI C-R            | :0       |     |   |
| MONI M-G            | :0       |     |   |
| MONI Y-B            | :0       |     |   |
| 01 A1               | 2HF      |     |   |

Switch OUT to green by pressing the  $\diamond$  or  $\triangleleft$  button. OUTPUT SETUP menu appears.

OUTPUT SETUP  
/c/i/p/i/OUT/

Display OUT in capital letters by pressing the  $\diamond$  or  $\triangleleft$  button. OUTPUT SETUP appears.

- 2 Select SOURCE by pressing the  $\diamond$  or  $\triangleleft$  button.

| OUTPUT SETUP        | COLOR    | ann | S |
|---------------------|----------|-----|---|
| COL/LAY/PRN/IN/OUT/ |          |     |   |
| SOURCE              | :THRU/EE |     |   |
| DISP/ON             | :OFF/ON  |     |   |
| MONI C-R            | :0       |     |   |
| MONI M-G            | :0       |     |   |
| MONI Y-B            | :0       |     |   |
| 01 A1               | 2HF      |     |   |

Position the cursor to SOURCE by pressing the  $\diamond$  or  $\triangleleft$  button.

SOURCE  
: thru/EE

Display SOURCE by pressing the  $\diamond$  or  $\triangleleft$  button

- 3 Select EE by pressing the  $\diamond$  or  $\triangleleft$  button.

| OUTPUT SETUP        | COLOR    | ann | S |
|---------------------|----------|-----|---|
| COL/LAY/PRN/IN/OUT/ |          |     |   |
| SOURCE              | :THRU/EE |     |   |
| DISP/ON             | :OFF/ON  |     |   |
| MONI C-R            | :0       |     |   |
| MONI M-G            | :0       |     |   |
| MONI Y-B            | :0       |     |   |
| 01 A1               | 2HF      |     |   |

Switch EE to green by pressing the  $\diamond$  or  $\triangleleft$  button.

SOURCE  
: thru/EE

Display EE in capital letters by pressing the  $\diamond$  or  $\triangleleft$  button.

- 4 Press the MENU button.  
The regular screen appears.

- 5 Capture a new image into memory and make a printout.  
Adjust the settings by comparing the printout with the image on the monitor.

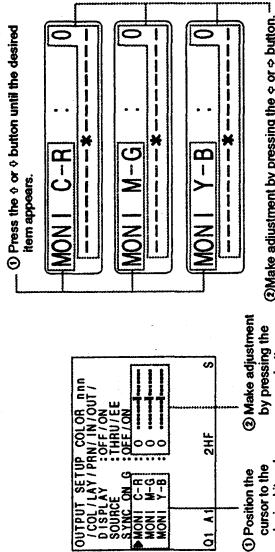
- 6 Press the MENU button, then select OUTPUT SETUP menu by pressing the  $\diamond$  or  $\triangleleft$  button.

Continue to next page  $\rightarrow$

Setting Up the Printer (continued)

- 7 Adjust the monitor while comparing the printout with the image on the monitor.
- ① Select the adjustment item by pressing the  $\diamond$  or  $\triangle$  button.
  - ② Perform adjustment by pressing the  $\diamond$  or  $\triangle$  button.

| Menu Adjustment Item | When selecting                           | Button to be pressed on the menu | Adjustment direction |
|----------------------|------------------------------------------|----------------------------------|----------------------|
| MON C-R              | To make the screen become reddish        | $\diamond$ button                | Toward R (red)       |
|                      | To make the screen become cyan (blue)    | $\triangle$ button               | Toward C (cyan)      |
| MON M-G              | To make the screen become greenish       | $\diamond$ button                | Toward G (green)     |
|                      | To make the screen become magenta (pink) | $\triangle$ button               | Toward M (magenta)   |
| MON Y-B              | To make the screen become bluish         | $\diamond$ button                | Toward B (blue)      |
|                      | To make the screen yellowish             | $\triangle$ button               | Toward Y (yellow)    |



- 8 Press the MENU button.
- The regular screen appears.

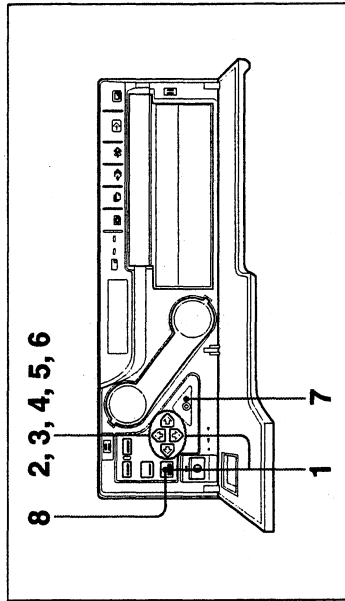
Adjusting the Printout Color

You can adjust the printout quality by adjusting the color intensity, printout sharpness and tone (GAMMA) of the printout.

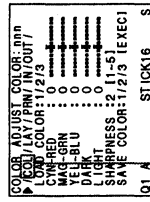
Adjusting the color intensity, contrast and sharpness

You can adjust the color intensity (RED/GREEN/BLUE), contrast (DARK/LIGHT) and printout sharpness. You can store up to three settings. These settings are managed according to the LOAD COLOR number. The color intensity, picture contrast and sharpness of a printout are determined by recalling one of the three settings according to their LOAD COLOR numbers. This is useful when you are using more than one item of video equipment, each having different characteristics, when you want to print images having different color qualities and picture contrast, and when multiple users access a single printer. Also, you can make a printout using temporarily set values, without erasing the stored adjustment values.

Perform the adjustments while viewing the images stored in memory. All values of the color intensity and contrast are factory-set to 0 and the sharpness is set to 3 for LOAD COLOR numbers 1, 2 and 3.



- 1 Press the MENU button, then select COLOR ADJUST menu by pressing the  $\diamond$  or  $\triangle$  button.



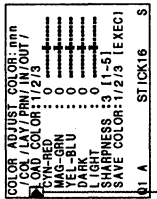
Display COL in capital letters by pressing the  $\diamond$  or  $\triangle$  button. COLOR SETUP appears.

Switch COL to green by pressing the  $\diamond$  or  $\triangle$  button. COLOR SETUP menu appears.

Continue to next page  $\rightarrow$   
Installation and Adjustment

Setting Up the Printer (continued)

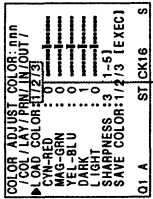
- 2 Select LOAD COLOR by pressing the  $\diamond$  or  $\nabla$  button.



Display LOAD COLOR by pressing the  $\diamond$  or  $\nabla$  button

Position the cursor to LOAD COLOR by pressing the  $\diamond$  or  $\nabla$  button.

- 3 Select the LOAD COLOR number of the values to be adjusted or to be modified by pressing the  $\diamond$  or  $\nabla$  button.



Display the desired LOAD COLOR number by pressing the  $\diamond$  or  $\nabla$  button.

Switch the desired LOAD COLOR number to green by pressing the  $\diamond$  or  $\nabla$  button.

When modifying, you can preserve the original settings. (See "To retain the originally set value" on page 79.)

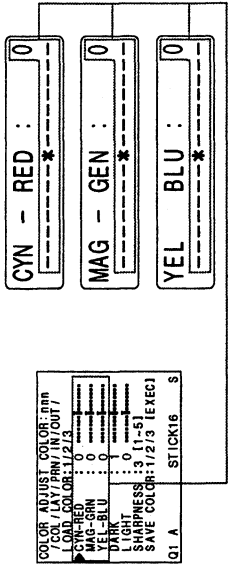
- 4 Adjust the printout color.

- ① Select the item to be adjusted by pressing the  $\diamond$  or  $\nabla$  button.  
② Perform the adjustment by pressing the  $\diamond$  or  $\nabla$  button.

The RED, GREEN and BLUE color component and contrast settings are divided into 15 steps, from -7 to +7, indicated by a value and graph. The center of the graph corresponds to the standard color. You can set the sharpness to any of 5 steps from 1 to +5. On a setting of step 3 corresponds to the standard sharpness.

When adjusting the RED/GREEN/BLUE (color intensity)

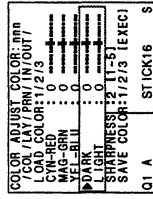
| Menu Adjustment Item | When selecting                   | Button to be pressed | Adjustment direction on the menu |
|----------------------|----------------------------------|----------------------|----------------------------------|
| CYN-RED              | To make the image reddish        | $\diamond$ button    | Toward RED                       |
|                      | To make the image cyan (blue)    | $\nabla$ button      | Toward CYN (cyan)                |
| MAG-GRN              | To make the image magenta (pink) | $\diamond$ button    | Toward MAG (magenta)             |
|                      | To make the image greenish       | $\nabla$ button      | Toward GRN (green)               |
| YEL-BLU              | To make the image yellowish      | $\diamond$ button    | Toward YEL (yellow)              |
|                      | To make the image bluish         | $\nabla$ button      | Toward BLU (blue)                |



Adjust the color intensity

When adjusting DARK/LIGHT (contrast)

| Adjustment Item | When selecting                       |
|-----------------|--------------------------------------|
| DARK            | To adjust the dark area of an image  |
| LIGHT           | To adjust the light area of an image |



The contrast in the dark area or light area is increased in the + direction by pressing the  $\diamond$  button.  
The contrast in the dark area or light area is weakened in the - direction by pressing the  $\nabla$  button.

Continue to next page  $\rightarrow$

Setting Up the Printer (continued)

When adjusting the sharpness

You can set the sharpness to any of 5 steps from 1 to 5. A setting of step 3 corresponds to the standard sharpness.

| When selecting           | Content of settings          |
|--------------------------|------------------------------|
| To make a soft outline   | Toward step 1                |
| To make a normal outline | Centered (step 3)            |
| To make a sharp outline  | To the right (toward step 5) |

COLOR ADJUST COLOR: ann  
/COL /LAY /PRN /IN /OUT /  
LOAD COLOR: 1/2/3  
CYN-RED : 0  
MAG-GRN : 0  
YEL-BLU : 0  
DARK : 0  
LIGHT : 0  
SHARPNESS : 2 [1-5]  
SAVE COLOR: 1/2/3 [EXEC]  
01 A STICK16 S

SHARPNESS : 2 [1-5]

The number and the corresponding sharpness increase every time you press the ◀ button.  
The number and the corresponding sharpness decrease every time you press the ▶ button.

Once you have changed the value

Once you have changed the value, TEMP (temporary) appears on the menu screen. TEMP indicates that the settings are temporary and have not yet been stored.

5 Select SAVE COLOR by pressing the ◀ or ▶ button.

COLOR ADJUST COLOR: ann  
/COL /LAY /PRN /IN /OUT /  
LOAD COLOR: 1/2/3  
CYN-RED : 0  
MAG-GRN : 0  
YEL-BLU : 0  
DARK : 0  
LIGHT : 0  
SHARPNESS : 2 [1-5]  
SAVE COLOR: 1/2/3 [EXEC]  
01 A STICK16 S

SAVE COLOR: 1/-/- [EXEC]

Press the ◀ or ▶ button until SAVE COLOR appears.

Position the cursor to SAVE COLOR by pressing the ◀ or ▶ button.

6 Select the SAVE COLOR number to which new settings are to be stored by pressing the ◀ or ▶ button.

COLOR ADJUST COLOR: ann  
/COL /LAY /PRN /IN /OUT /  
LOAD COLOR: 1/2/3  
CYN-RED : 0  
MAG-GRN : 0  
YEL-BLU : 0  
DARK : 0  
LIGHT : 0  
SHARPNESS : 2 [1-5]  
SAVE COLOR: 1/2/3 [EXEC]  
01 A STICK16 S

SAVE COLOR: -/2/- [EXEC]

Press the ◀ or ▶ button until the desired SAVE COLOR number appears.

Switch the desired SAVE COLOR number to green by pressing the ◀ or ▶ button.

To retain the originally set value

Select a SAVE COLOR number which is different from the LOAD COLOR number selected in step 3.

- 7 Press the EXEC button.  
The settings are registered to the SAVE COLOR number selected in step 6. TEMP disappears from the menu.
- 8 Press the MENU button.  
The regular screen appears.

To copy the settings made for one certain LOAD COLOR number to another PRESET number.

- 1 Select the source LOAD COLOR number for which the settings to be copied are stored on the COLOR ADJUST menu.
- 2 Select the target SAVE COLOR number to which data is to be copied.
- 3 Press the EXEC button.  
Settings stored to the LOAD COLOR number selected in step 1 are copied to the SAVE COLOR number selected in step 2.

To recall the LOAD COLOR number in which printout color settings (color intensity, contrast and sharpness) are stored

Switch the desired LOAD COLOR number to green for the LOAD COLOR item in the COLOR ADJUST menu.  
The printout is made according to the setting of the selected LOAD COLOR number as long as you do not modify the settings.

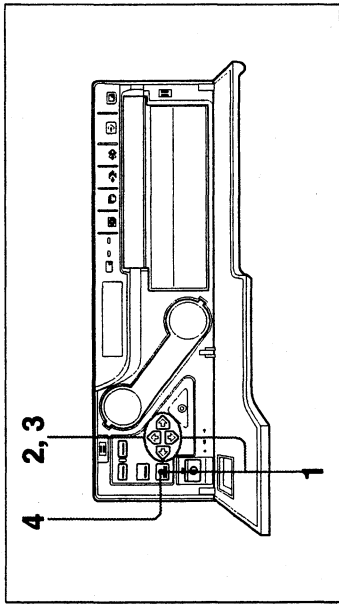
Setting Up the Printer (continued)

Adjusting the tone of the printout

You can adjust the tone so that the details in the white or black part is clearly printed.

Note

The tone (GAMMA) setting is activated only when the UPC-2010 color printing pack or UPC-2020 B/W printing pack is used.



1 Press the MENU button, then select PRINTER SETUP menu by pressing the  $\diamond$  or  $\nabla$  button.

|                         |     |
|-------------------------|-----|
| PRINTER SETUP COLOR mmm |     |
| LOAD COLOR: 12/3        | S   |
| PRINT QTY: 9            | 2HF |
| INTERVAL: OFF/ON        |     |
| GAMMA: S/NORMAL/H       |     |
| SYSTEM: PRESS [3]       |     |
| FUNCTION: PRESS [3]     |     |
| Q1 A1                   |     |

Switch PRN to green by pressing the  $\diamond$  or  $\nabla$  button. PRINTER SETUP menu appears.

PRINTER SETUP  
/ c / i / PRN / i / o /

Display PRN in capital letters by pressing the  $\diamond$  or  $\nabla$  button. PRINTER SETUP appears.

2 Select GAMMA by pressing the  $\diamond$  or  $\nabla$  button.

|                         |     |
|-------------------------|-----|
| PRINTER SETUP COLOR mmm |     |
| LOAD COLOR: 12/3        | S   |
| PRINT QTY: 9            | 2HF |
| INTERVAL: OFF/ON        |     |
| GAMMA: S/NORMAL/H       |     |
| SYSTEM: PRESS [3]       |     |
| FUNCTION: PRESS [3]     |     |
| Q1 A1                   |     |

Position the cursor to GAMMA by pressing the  $\diamond$  or  $\nabla$  button.

GAMMA  
S / NORMAL / H

Display GAMMA by pressing the  $\diamond$  or  $\nabla$  button.

3 Select the desired tone pressing the  $\diamond$  or  $\nabla$  button.

|                         |     |
|-------------------------|-----|
| COLOR ADJUST COLOR: mmm |     |
| LOAD COLOR: 12/3        | S   |
| PRINT QTY: 9            | 2HF |
| INTERVAL: OFF/ON        |     |
| GAMMA: S/NORMAL/H       |     |
| SYSTEM: PRESS [3]       |     |
| FUNCTION: PRESS [3]     |     |
| Q1 A1                   |     |

Switch the desired tone to green by pressing the  $\diamond$  or  $\nabla$  button.

LOAD COLOR:  
- / 2 / -

Display the desired tone by pressing the  $\diamond$  or  $\nabla$  button.

When selecting

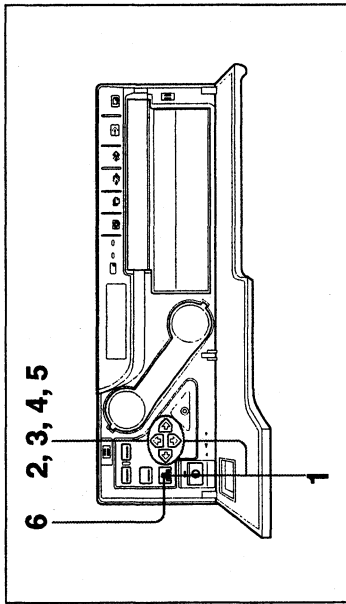
| Setting                                                                               | Setting |
|---------------------------------------------------------------------------------------|---------|
| To make a printout of an image where there are a lot of white or light-colored areas. | SOFT    |
| To make a printout of a normal image.                                                 | NORMAL  |
| To make a printout of an image where there are a lot of black or dark-colored areas.  | HARD    |

4 Press the MENU button.

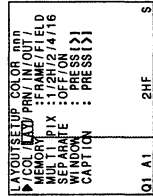
Setting Up the Printer (continued)

Changing the Printout Size/Printout Area

When you print an image that is narrower or wider than the standard screen size, a black frame may be printed or the image may be partially cut. In such a case, you can change the screen size. Or, a black line may be produced on the printout even though it does not appear on the video monitor. Any portion for which there is no video signal is printed in black. This may occur when you make printouts after connecting a different video source or play back different video software. In such a case, you can adjust the printout area by moving the screen either horizontally or vertically. When a black frame appears around the printout, even after the printout area has been shifted, narrow the printout size because the image has been overscanned beyond the range of the regular screen.



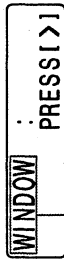
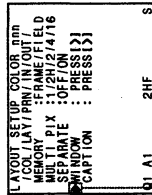
- 1 Press the MENU button, then select LAYOUT SETUP menu by pressing the  $\diamond$  or  $\nabla$  button.



Display LAY in capital letters by pressing the  $\diamond$  or  $\nabla$  button. LAYOUT SETUP appears.

Switch LAY to green by pressing the  $\diamond$  or  $\nabla$  button. LAYOUT SETUP menu appears.

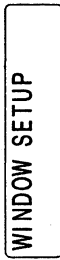
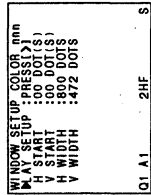
- 2 Select WINDOW by pressing the  $\diamond$  or  $\nabla$  button.



Display WINDOW by pressing the  $\diamond$  or  $\nabla$  button.

Position the cursor to WINDOW by pressing the  $\diamond$  or  $\nabla$  button.

- 3 Press the  $\diamond$  button.  
The WINDOW SETUP menu appears.

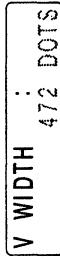
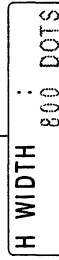
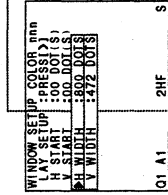


- 4 Adjust the printer according to the obtained printout.  
1 Select the item to be adjusted by pressing the  $\diamond$  or  $\nabla$  button.  
2 Perform the adjustment by pressing the  $\diamond$  or  $\nabla$  button.

**When a black frame is printed or the image is partially cut**  
Adjust the printout size by using the H WIDTH and V WIDTH items from the menu.

| When selecting                                                                                                                  | Adjustment item | Button to be used | Adjustment result                                         |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|-----------------------------------------------------------|
| To change the size, adjust the position of the right edge. The left edge remains fixed. (The screen size changes horizontally.) | H-WIDTH         | $\diamond$ button | Widened at the right edge.                                |
| To change the size, adjust the position of the bottom edge. The top edge remains fixed. (The screen size changes vertically.)   | V-WIDTH         | $\diamond$ button | Narrowed with the left edge remaining fixed.              |
| To change the size, adjust the position of the bottom edge. The top edge remains fixed. (The screen size changes vertically.)   | V-WIDTH         | $\nabla$ button   | Enlarged downwards.                                       |
| To change the size, adjust the position of the bottom edge. The top edge remains fixed. (The screen size changes vertically.)   | V-WIDTH         | $\diamond$ button | Vertical sized reduced with the top edge remaining fixed. |

Adjusting the printout size horizontally.



Adjusting the printout size vertically.

Continue to next page  $\rightarrow$   
Installation and Adjustment



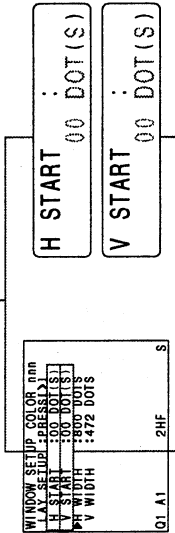
Setting Up the Printer (continued)

When a black line appears on the printout

Adjust the printout area according to the position of the line on the printout, by using the H START and V START items on the menu.

| Position where the black line appears | Menu adjustment item           | Button to be used | Adjustment result                                                     |
|---------------------------------------|--------------------------------|-------------------|-----------------------------------------------------------------------|
| On the right                          | H START (horizontal direction) | ◁ button          | The image position shifts to the right with the size remaining as is. |
| On the left                           |                                | ▷ button          | The image position shifts to the left with the size remaining as is.  |
| At the top                            | V START (vertical direction)   | ◁ button          | The image position shifts up with the size remaining as is.           |
| At the bottom                         |                                | ▷ button          | The image position shifts down with the size remaining as is.         |

When the black line is at the right or left edge



When the black line is at the top or bottom

To clear the adjusted value

Press the MENU button from the WINDOW SETUP menu. The adjusted values are cleared and the values are reset to the original ones.

Note

When a black line still appears, even after adjusting H START or V START, change the printout size.

- 5 Select LAYOUT SETUP by pressing the ◊ or ◂ button., then press the ◂ button. The adjusted values are stored. The LAYOUT SETUP menu appears.
- 6 Press the MENU button. The regular screen appears.

To check the adjustment result

Capture a new image and print it to check that no black frame appears on the printout, that the image is not partially cut, and that no black line appears.

Selecting the Operation Mode for Automatic Printing Capabilities

You can control the printer with either of the following options.

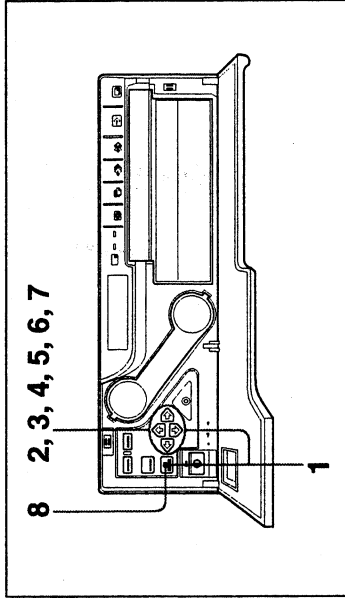
- RM-5500 Remote Control Unit (not supplied): Connected to REMOTE 1 connector
- RM-91 Remote Control Unit, FS-20/36 Foot Switch (not supplied): Connected to REMOTE 2 connector ("Making Connections to Enable Remote Control" page 67)

Using the menu, you can assign desired functions to the remote control unit connected to the REMOTE 2 connector.

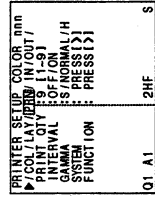
In addition to the above, the printer can be remotely controlled by a pulse signal input to REMOTE 2. (see pages 101 and 102).

Also, you can control the printer using the personal computer.

For detailed information on controlling with the computer, contact with your Sony dealer.



- 1 Press the MENU button, then select PRINTER SETUP menu by pressing the ◊ or ◂ button.



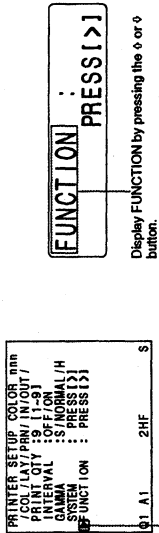
Display PRN in capital letters by pressing the ◊ or ◂ button. PRINTER SETUP appears.

Switch PRN to green by pressing the ◊ or ◂ button. PRINTER SETUP menu appears.

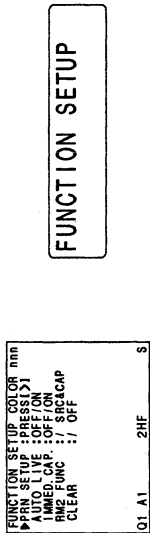
Continue to next page →

# Setting Up the Printer (continued)

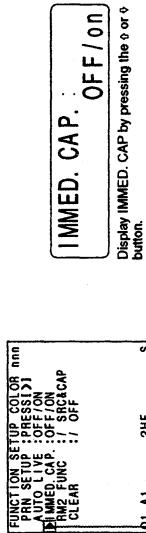
2 Select FUNCTION by pressing the  $\diamond$  or  $\nabla$  button.



3 Press the  $\diamond$  button. The FUNCTION SETUP menu appears.



4 Select IMMEDIATE CAP by pressing the  $\diamond$  or  $\nabla$  button.



5 Select the desired timing to capture the image by pressing the  $\diamond$  or  $\nabla$  button.

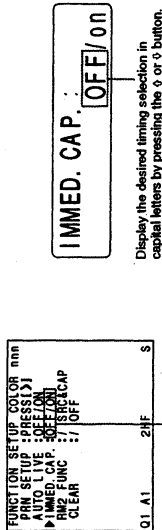
| Timing                                                                               | Selection |
|--------------------------------------------------------------------------------------|-----------|
| To capture the image just after the CAPTURE command is received <sup>a)</sup>        | ON        |
| To capture the image with the timing pulse input to REMOTE 2 connector <sup>b)</sup> | OFF       |

a) When IMMEDIATE CAP is set to ON, display the source image on the video monitor when sending the timing pulse to the printer. The printer operation is only to capture the image when receiving the pulse.  
b) For detailed information on the timing pulse to REMOTE 2 connector, see page 101.

Select ON when you want to capture the image at the precise timing by controlling from the computer.

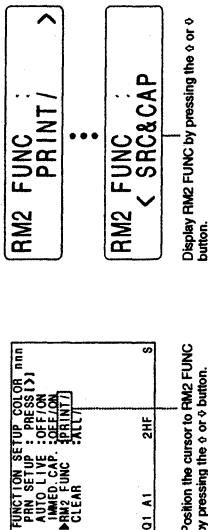
## Note

To control the printer remotely using the remote control unit, set the IMMEDIATE CAP item on the FUNCTION SETUP menu to OFF.



Switch the desired timing selection to green by pressing the  $\diamond$  or  $\nabla$  button.

6 Select RM2 FUNC by pressing the  $\diamond$  or  $\nabla$  button.



Continue to next page  $\rightarrow$

Setting Up the Printer (continued)

- 7 Select the function that you want to assign to the remote control unit connected to the REMOTE 2 connector by pressing the ◀ or ▶ button.

| Item to be selected          | Operation                                                                                                                                                                                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRINT                        | Printing whenever you press the switch.                                                                                                                                                                                                                                                            |
| C & PRINT (CAPTURE & PRINT)  | Capturing an image to a memory page and printing a memory image. If you press the switch while printing is being performed, the selected image is queued, with the queued image being printed once printing has been completed.                                                                    |
| CYCLIC-C (CYCLIC CAPTURE)    | Capturing images to memory pages cyclically whenever you press the switch. The printer continues to capture images, replacing that previously stored with a new one.                                                                                                                               |
| CAP-STOP (CAPTURE STOP)      | Capturing images to a memory page. Once images have been captured to all the memory pages, the printer stops storing images and the message HIT ANY KEY appears.                                                                                                                                   |
| BACK-SP (CAPTURE BACK)       | The pointer (green) returns to its former position whenever you press the switch.                                                                                                                                                                                                                  |
| POINTER                      | The pointer (green) moves to the next position whenever you press the switch.                                                                                                                                                                                                                      |
| STOP                         | Stopping printing whenever you press the switch. An paper which is currently being printed will be ejected.                                                                                                                                                                                        |
| CAP/SRC (CAPTURE/SOURCE)     | When the source image is displayed, the image is captured to memory whenever you press the switch. When the memory image is displayed, the source image appears whenever you press the switch.                                                                                                     |
| PRINT & PAGE                 | Starting to print when you press the switch if the image has been captured in the memory, and at the same time moving to the next memory page.<br>If the image has not been captured in the memory page, the printer does not work correctly when you press the switch of the remote control unit. |
| SRC & CAP (SOURCE & CAPTURE) | When you press and hold down the switch of the remote control unit, the source image appears on the monitor screen and captures the image at the instant you release the switch.                                                                                                                   |

FUNCTION SETUP COLOR nnn  
PRN SETUP : PRESS [X]  
AUTO LIVE : OFF/ON  
IMMED CAP : DEF/ON  
PRINT FUNC : SELECT  
CLEAR : ALL/1

RM2 FUNC :  
PRINT / >

RM2 FUNC :  
< SRC&CAP

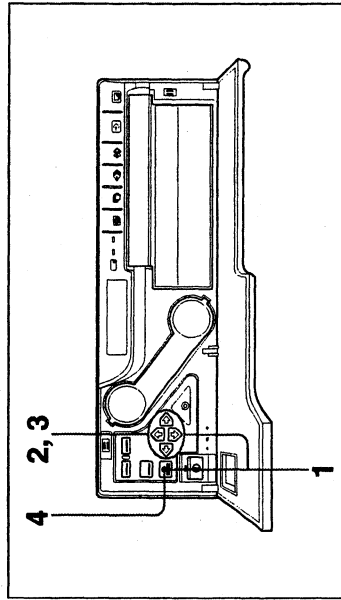
Switch the desired function to green by pressing the ◀ or ▶ button.

When > is displayed, another function can be selected by pressing the ◀ button. When < and > are displayed, another function can be selected by pressing either the ◀ or ▶ button.

8 Press the MENU button.  
The regular screen appears.

Erasing the Screen Display

You can erase a screen display with the menu when, for example, it is hard to see the image that is hidden behind the screen display. The printer operation is identical, regardless of whether screens are displayed. The same messages are displayed in the printer window display. The printer window display is equipped with the models other than UP-2300P.



- 1 Press the MENU button, then select OUTPUT SETUP menu by pressing the ◀ or ▶ button.

OUTPUT SETUP COLOR nnn  
COL/LAY/PRN/IN/OUT/  
SOURCE : THRU/FE  
SYNC ON G : OFF/ON  
MONI C-R : 0  
MONI M-G : 0  
MONI Y-B : 0

OUTPUT SETUP  
/C / I / P / I / OUT /

Display OUT in capital letters by pressing the ◀ or ▶ button. OUTPUT SETUP appears.

Switch OUT to green by pressing the ◀ or ▶ button. OUTPUT SETUP menu appears.

2 Select DISPLAY by pressing the ◀ or ▶ button.

OUTPUT SETUP COLOR nnn  
COL/LAY/PRN/IN/OUT/  
SOURCE : THRU/FE  
SYNC ON G : OFF/ON  
MONI C-R : 0  
MONI M-G : 0  
MONI Y-B : 0

DISPLAY : 01 / ON

Display DISPLAY by pressing the ◀ or ▶ button.

Position the cursor to DISPLAY by pressing the ◀ or ▶ button.

Continue to next page →  
Installation and Adjustment

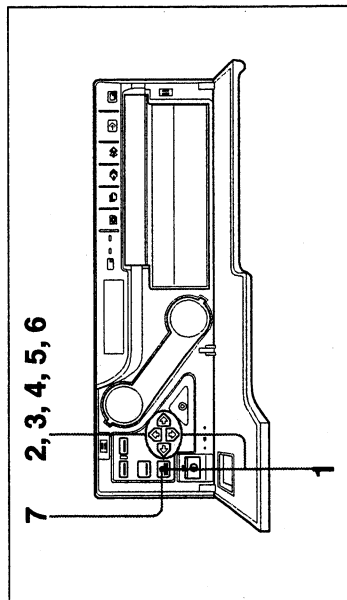
88 Installation and Adjustment

89

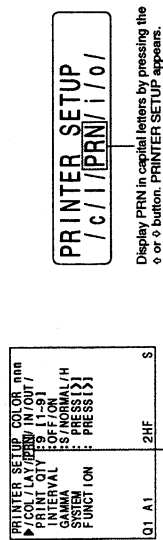
1-45

## Adjusting the Brightness of the Printer Window Display

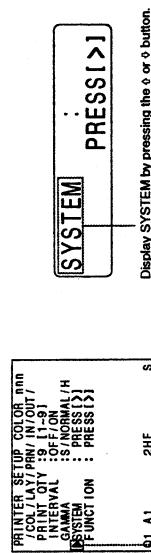
The printer window display is equipped with the models other than UP-2300P.



- 1** Press the **MENU** button, then select **PRINTER SETUP** menu by pressing the **↔** or **↔** button.

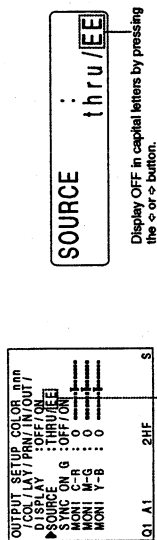


- ## 2 Select SYSTEM by pressing the $\diamond$ or $\nabla$ button.



**Continue to next page →**  
Installation and Adjustment | 91

- 3** Select OFF by pressing the  or .



Display OFF in capital letters by pressing the  $\diamond$  or  $\square$  button.

### To display screen messages

Select ON in step 3.

**Note**

**Warning:** If you set the printer output signal specification to THRU (through), screen messages do not appear, even when you switch ON to green. However, error messages can appear at any time.

- 4** Press the **MENU** button.  
The regular screen appears.

**To temporarily erase the monitor display**

**When the monitor display turns off:** While the MENU screen appears: While the DISPLAY OFF button on the sub panel is held down, the screen display disappears, even if DISPLAY OFF is set to ON. Upon releasing the DISPLAY OFF button, the screen display appears again.

**When the regular screen arrears:** The screen messages switches on the and off whenever you press the **DISPLAY OFF** button, regardless of the menu setting on the **OUTPUT SETUP** menu.

## Setting Up the Printer (continued)

### 3 Press the $\diamond$ button.

The SYSTEM SETUP menu appears.

|                       |              |
|-----------------------|--------------|
| SYSTEM SETUP          |              |
| PRINTER SETUP : COLOR | mm           |
| PRINTER SETUP : PRESS | 1.5          |
| LCD-CNTR. :           | 7            |
| BAUDRATE :            | 1/24/4800/96 |
| BEEP :                | OFF/ON       |
| APPL. :               | STANDARD     |
| Q1 A1                 | 2HF S        |

### 4 Select LCD CNTR. by pressing the $\diamond$ or $\phi$ button.

|                       |              |
|-----------------------|--------------|
| SYSTEM SETUP          |              |
| PRINTER SETUP : COLOR | mm           |
| PRINTER SETUP : PRESS | 1.5          |
| LCD-CNTR. :           | 7            |
| BAUDRATE :            | 1/24/4800/96 |
| BEEP :                | OFF/ON       |
| APPL. :               | STANDARD     |
| Q1 A1                 | 2HF S        |

Position the cursor to LCD CNTR. by pressing the  $\diamond$  or  $\phi$  button.

### 5 Adjust the brightness of the printer window display by pressing the $\diamond$ or $\phi$ button.

|                       |              |
|-----------------------|--------------|
| SYSTEM SETUP          |              |
| PRINTER SETUP : COLOR | mm           |
| PRINTER SETUP : PRESS | 1.5          |
| LCD-CNTR. :           | 5            |
| BAUDRATE :            | 1/24/4800/96 |
| BEEP :                | OFF/ON       |
| APPL. :               | STANDARD     |
| Q1 A1                 | 2HF S        |

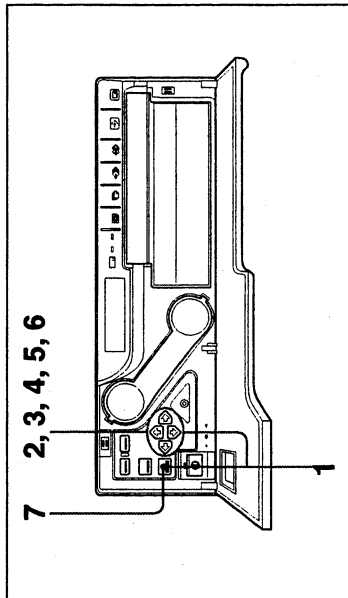
The number increases and the contrast increases every time the  $\diamond$  button is pressed.  
The number decreases and the contrast decreases every time the  $\phi$  button is pressed.

### 6 Select PRN SETUP by pressing the $\diamond$ or $\phi$ button, then press the $\diamond$ button. The adjusted values are stored. The PRINTER SETUP menu appears.

### 7 Press the MENU button. The regular screen appears.

## Selecting Whether the Operation and Error Tones Sound

Whenever you press a button on the front panel or sub panel, the operation tone sounds (one time). When an error occurs, the alarm tone sounds (three times). You can turn these tones on and off with menu.



### 1 Press the MENU button, then select PRINTER SETUP menu by pressing the $\diamond$ or $\phi$ button.

|               |            |
|---------------|------------|
| PRINTER SETUP |            |
| COLOR         | mm         |
| PRINT         | 1.5        |
| INTERVAL      | OFF/ON     |
| GAMMA         | S/NORMAL/H |
| SYSTEM        | STANDARD   |
| FUNCTION      | PRESS 1.5  |
| Q1 A1         | 2HF S      |

Switch PRN to green by pressing the  $\diamond$  or  $\phi$  button. PRINTER SETUP menu appears.

|               |            |
|---------------|------------|
| PRINTER SETUP |            |
| COLOR         | mm         |
| PRINT         | 1.5        |
| INTERVAL      | OFF/ON     |
| GAMMA         | S/NORMAL/H |
| SYSTEM        | STANDARD   |
| FUNCTION      | PRESS 1.5  |
| Q1 A1         | 2HF S      |

Display PRN in capital letters by pressing the  $\diamond$  or  $\phi$  button. PRINTER SETUP appears.

### 2 Select SYSTEM by pressing the $\diamond$ or $\phi$ button.

|               |            |
|---------------|------------|
| PRINTER SETUP |            |
| COLOR         | mm         |
| PRINT         | 1.5        |
| INTERVAL      | OFF/ON     |
| GAMMA         | S/NORMAL/H |
| SYSTEM        | STANDARD   |
| FUNCTION      | PRESS 1.5  |
| Q1 A1         | 2HF S      |

Position the cursor to SYSTEM by pressing the  $\diamond$  or  $\phi$  button.

|          |           |
|----------|-----------|
| SYSTEM   |           |
| STANDARD | PRESS 1.5 |
| Q1 A1    | 2HF S     |

Display SYSTEM by pressing the  $\diamond$  or  $\phi$  button.

Continue to next page  $\rightarrow$   
Installation and Adjustment 93

Setting Up the Printer (continued)

- 3 Press the  $\diamond$  button.  
The SYSTEM SETUP menu appears.

|                        |       |
|------------------------|-------|
| SYSTEM SETUP COLOR nnn |       |
| PRN SETUP :PRESS [X]   |       |
| CD-CTR : 7             |       |
| BAUDRATE : 24/4800/96  |       |
| BEEP : OFF/ON          |       |
| APPL : STANDARD        |       |
| Q1 A1                  | 2HF S |

- 4 Select BEEP by pressing the  $\diamond$  or  $\triangle$  button.

|                        |       |
|------------------------|-------|
| SYSTEM SETUP COLOR nnn |       |
| PRN SETUP :PRESS [X]   |       |
| CD-CTR : 7             |       |
| BAUDRATE : 24/4800/96  |       |
| BEEP : OFF/ON          |       |
| APPL : STANDARD        |       |
| Q1 A1                  | 2HF S |

Position the cursor to BEEP by pressing the  $\diamond$  or  $\triangle$  button.

- 5 Select whether the operation and error tones sound by pressing the  $\diamond$  or  $\triangle$  button.

|                        |       |
|------------------------|-------|
| SYSTEM SETUP COLOR nnn |       |
| PRN SETUP :PRESS [X]   |       |
| CD-CTR : 7             |       |
| BAUDRATE : 24/4800/96  |       |
| BEEP : OFF/ON          |       |
| APPL : STANDARD        |       |
| Q1 A1                  | 2HF S |

Display the desired operation in capital letters by pressing the  $\diamond$  or  $\triangle$  button.

| When selecting       | Selection |
|----------------------|-----------|
| To sound the tones   | ON        |
| To disable the tones | OFF       |

- 6 Select PRN SETUP by pressing the  $\diamond$  or  $\triangle$  button., then press the  $\diamond$  button.  
The adjusted values are stored. The PRINTER SETUP menu appears.

- 7 Press the MENU button.  
The regular screen appears.

|              |  |
|--------------|--|
| SYSTEM SETUP |  |
|--------------|--|

|               |  |
|---------------|--|
| BEEP : off/ON |  |
|---------------|--|

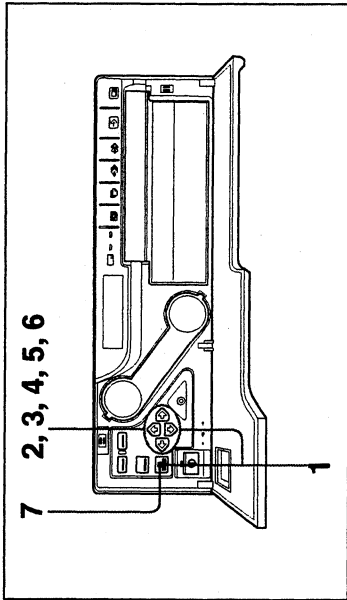
Display BEEP by pressing the  $\diamond$  or  $\triangle$  button.

|               |  |
|---------------|--|
| BEEP : off/ON |  |
|---------------|--|

Display the desired operation in capital letters by pressing the  $\diamond$  or  $\triangle$  button.

Setting the Baud Rate for Computer Communication

When controlling the printer with a computer connected to the printer's RS-232C connector, select the appropriate baud rate. For details, contact your nearest Sony dealer.



- 1 Press the MENU button, then select PRINTER SETUP menu by pressing the  $\diamond$  or  $\triangle$  button.

|                         |       |
|-------------------------|-------|
| PRINTER SETUP COLOR nnn |       |
| COL/LAY/PRN/IN/OUT/     |       |
| PRINT QTY : 9 (1-9)     |       |
| INTERVAL : 5/NORMAL/H   |       |
| GAMMA : 5/PRESS [X]     |       |
| SYSTEM : 5/PRESS [X]    |       |
| FUNCTION : 5/PRESS [X]  |       |
| Q1 A1                   | 2HF S |

Switch PRN to green by pressing the  $\diamond$  or  $\triangle$  button. PRINTER SETUP menu appears.

|               |  |
|---------------|--|
| PRINTER SETUP |  |
| /C/1/PRN/1/0/ |  |

Display PRN in capital letters by pressing the  $\diamond$  or  $\triangle$  button. PRINTER SETUP appears.

- 2 Select SYSTEM by pressing the  $\diamond$  or  $\triangle$  button.

|                         |       |
|-------------------------|-------|
| PRINTER SETUP COLOR nnn |       |
| COL/LAY/PRN/IN/OUT/     |       |
| PRINT QTY : 9 (1-9)     |       |
| INTERVAL : 5/NORMAL/H   |       |
| GAMMA : 5/PRESS [X]     |       |
| SYSTEM : 5/PRESS [X]    |       |
| FUNCTION : 5/PRESS [X]  |       |
| Q1 A1                   | 2HF S |

Position the cursor to SYSTEM by pressing the  $\diamond$  or  $\triangle$  button.

|           |  |
|-----------|--|
| SYSTEM    |  |
| PRESS [X] |  |

Display SYSTEM by pressing the  $\diamond$  or  $\triangle$  button.

Continue to next page  $\rightarrow$

Setting Up the Printer (continued)

3 Press the  $\Rightarrow$  button.

The SYSTEM SETUP menu appears.

SYSTEM SETUP

SYSTEM SETUP COLOR RNN  
PRN SETUP :PRESS (X)  
LCD-ONTR : 7  
BAUDRATE : /24/4800/96  
BEEP : OFF/ON  
APPLI : STANDARD

Q1 A1 2HF S

4 Select BAUD RATE by pressing the  $\diamond$  or  $\nabla$  button.

SYSTEM SETUP COLOR RNN  
PRN SETUP :PRESS (X)  
LCD-ONTR : 7  
BAUDRATE : /24/4800/96  
BEEP : OFF/ON  
APPLI : STANDARD

Q1 A1 2HF S

Position the cursor to BAUD RATE by pressing the  $\diamond$  or  $\nabla$  button.

5 Select the desired baud rate by pressing the  $\diamond$  or  $\nabla$  button.

SYSTEM SETUP COLOR RNN  
PRN SETUP :PRESS (X)  
LCD-ONTR : 7  
BAUDRATE : /24/4800/96  
BEEP : OFF/ON  
APPLI : STANDARD

Q1 A1 2HF S

Switch the desired baud rate to green by pressing the  $\diamond$  or  $\nabla$  button.

| Baud rate (bps) | Baud rate displayed on the menu (The display changes from upper-two digit indication to spelled-out indication.) |
|-----------------|------------------------------------------------------------------------------------------------------------------|
| 1200            | 12 → 1200                                                                                                        |
| 2400            | 24 → 2400                                                                                                        |
| 4800            | 48 → 4800                                                                                                        |
| 9600            | 96 → 9600                                                                                                        |

6 Select PRN SETUP by pressing the  $\diamond$  or  $\nabla$  button., then press the  $\Rightarrow$  button.

The adjusted values are stored. The PRINTER SETUP menu appears.

7 Press the MENU button.

The regular screen appears.

Others

## Precautions

## Safety

- Operate the printer using the power source specified in "Specifications" (page 100)
- Be careful not to damage the power cable by placing or dropping heavy objects on it; it is dangerous to use the unit with a damaged power cable.
- If you do not intend to use the unit for a long time, disconnect the power cable.
- Unplug the power cable by grasping the plug, not the cable itself.
- Do not disassemble the unit.
- Do not remove the cover. There is a danger of electric shock from the internal parts.
- Be careful not to spill water or other liquids on the unit, or to allow combustible or metallic material to enter the cabinet. If used with foreign matter in the cabinet, the unit is liable to fail, or present a risk of fire or electric shock.
- Ventilation holes are provided to prevent the unit from overheating. Be careful not to obstruct them with other units or by covering the unit with a cloth etc.
- If the unit malfunctions or if a foreign body falls into the cabinet, disconnect the power immediately and consult your Sony service facility or your Sony dealer.
- Do not open the top cover of the printer during printing because of mechanical hazard. If you do, turn off the power switch first.

## Installation

- Avoid placing the unit in a location subject to:
  - mechanical vibration
  - high humidity
  - excessive dust
  - direct or excessive sunlight
  - extremely high or low temperatures
- Do not use other electronic equipment near the unit. The unit will not work properly in strong electromagnetic fields.
- Do not place a heavy object such as a monitor on the printer.

## Condensation

- If the printer is subject to wide and sudden changes in temperature, such as when it is moved from a cold room to a warm room or when it is left in a room with a heater that tends to produce large amounts of moisture, condensation may form inside the printer. In such cases the printer will probably not work properly, and may even develop a fault if you persist in using it. If condensation forms, turn off the power and leave the printer to stand for at least one hour.
- If the printing pack is subjected to wide and sudden changes in temperature, condensation may form on the ink ribbon or paper. This will cause the printer to malfunction. Also, if the printing pack is used in this state, spots are likely to appear on the printout. Therefore, avoid storing the printing pack in locations subject to wide and sudden changes of temperature.
- To store a half-used printing pack, replace it in its original packing and reseal the package. If possible, keep the sealed printing pack in a cool, dark location. To subsequently use the printing pack, place it, in its sealed package, in a warm room for several hours. Doing so prevents condensation from forming when the printing pack is removed from its package.

Precautions (continued)

Location

To prevent internal heat built-up, leave enough room around the printer for air to circulate through the vents on the left hand side of the cabinet.

On transportation

Do not transport the printer with the supplied accessories. Doing so may cause malfunction.

Cleaning

Clean the cabinet, panel and controls with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzene, which may damage the finish.

Ink Ribbon Cartridge and Paper

Both paper and an ink ribbon cartridge are necessary for printing. Use the ink ribbon with the paper contained in the same package.

UPC-2010 Color Printing Pack

Contains color ink ribbon cartridge and paper.  
Color ink ribbon cartridge 1 roll  
A-6 (4 1/4 x 5 3/4 inches) size paper 200 sheets

Self-laminating Color Printing Pack UPC-2040A

Contains an ink ribbon cartridge and paper for automatic laminate coating.  
Color ink ribbon cartridge 1 roll  
A-6 size paper 120 sheets (The size is a little larger than paper of another printing pack).

16-split Self-adhesive Pre-cut Color printing pack UPC-20S16E

Contains an ink ribbon cartridge and paper for sticker of 16 reduced images.  
Color ink ribbon cartridge 1 roll  
A-6 (4 1/4 x 5 3/4 inches) size paper 200 sheets

4-split Self-adhesive Pre-cut Color printing pack UPC-20S04E

Contains an ink ribbon cartridge and paper for sticker of 4 reduced images.  
Color ink ribbon cartridge 1 roll  
A-6 (4 1/4 x 5 3/4 inches) size paper 200 sheets

Color Postcard Printing Pack UPC-2070E

Contains an ink ribbon cartridge and paper for post cards  
Color ink ribbon cartridge 1 roll  
A-6 size paper 150 sheets (The size is a little larger than paper of another printing pack).

B/W Printing Pack UPC-2020

Contains an ink ribbon cartridge and paper.  
B & W ink ribbon cartridge 1 roll  
A-6 (4 1/4 x 5 3/4 inches) size paper 200 sheets

Notes

- Use only the ink ribbon cartridge and paper designed for use with this printer. If you use a different type, the printer may not print properly or malfunction.
- Use the ink ribbon with the paper contained in the same package. If the printer detects an incompatible combination, an error message appears in the printer window display. Doing so may result in degradation of the print picture quality and occurrence of any trouble.
- Ink ribbon and paper are not reusable. Once exhausted, replace them with new ones.

About UPA-2002 paper tray (not supplied)

The paper size of the UPC-2040A self-laminating color printing pack and the UPC-2070E postcard color printing pack is a little larger than paper of other printing packs. The paper tray supplied with the printer is too small to load UPC-2040A and UPC-2070E paper.

To use these types of paper, the UPA-2002 paper tray (not supplied) is required.



# Specifications

## Power requirements

UP-2300P/2800P/2850P: 220 to 240 V AC, 50/60 Hz  
UP-2900MD/2950MD: 120 to 240 V AC, 50/60 Hz

## Power consumption

UP-2300P/2800P/2850P: About 1.0 A max. at 25°C, 240 V AC  
UP-2900MD/2950MD: About 1.0 A max. at 25°C, 240 V AC  
1.8 A max. at 25°C, 120 V AC

## Operating temperature

5°C to 35°C (41°F to 95°F)

## Operating humidity

20 % to 80 %  
(no condensation allowed)

## Storage and transport temperature

-20°C to 60°C (-4°F to 140°F)

## Storage and transport humidity

20 % to 90 %

(no condensation allowed)

## Dimensions

About 370 × 125 × 417 mm (w/h/d)

(14 5/8 × 5 × 16 3/4 inches)

## Mass

About 14 kg (15 lb 14 oz)

## Printing system

Sublimation heat transfer printing

## Thermal head

12.2 dot/mm (1024 dots)

## Total gradation

256 levels each for yellow, magenta, and cyan

Approximately 35 seconds

UP-2300P/2800P/2850P: PAL

B.G.I standards

UP-2900MD/2950MD: Selectable with the NTSC/PAL selector

In NTSC mode: NTSC/EIA standards

In PAL mode: PAL B.G.I standards

## Input connectors

RGB SYNC (analog RGB signal):

BNC connector × 4 (for UP-2800P/2850P/2900MD/2950MD)

RGB: 0.7 Vp-p

SYNC: 0.3 to 4 Vp-p

75 ohms (terminated), sync negative

## S VIDEO

(Separate luminance (Y) and chrominance (C) signals):

4-pin mini-DIN × 1

Y: 1 Vp-p

C: For NTSC/EIA standards: 0.29 Vp-p color burst for PAL B.G.I standards: 0.3 Vp-p color burst

75 ohms (terminated), sync negative

VIDEO (NTSC composite video signal for NTSC/EIA standards and PAL composite video signal for PAL B.G.I standards):

BNC connector × 1

1 Vp-p, 75 ohms (terminated), sync negative

AC IN (for power input)

Output connectors

RGB SYNC (analog RGB signal):

BNC connector × 4 (for UP-2800P/2850P/2900MD/2950MD)

RGB: 0.7 Vp-p

SYNC: 1 Vp-p

75 ohms (terminated), sync negative

S VIDEO (Separate luminance (Y) and chrominance (C) signals):

4-pin mini-DIN × 1

Y: 1 Vp-p

C: For NTSC/EIA standards: 0.29 Vp-p color burst for PAL B.G.I standards: 0.3 Vp-p color burst

75 ohms (terminated), sync negative

VIDEO (NTSC composite video signal for NTSC/EIA standards and PAL composite video signal for PAL B.G.I standards) BNC connector × 1

1 Vp-p, 75 ohms (terminated), sync negative

## Controls connectors

REMOTE 1: special mini jack × 1

For RM-5500 Remote Control Unit (not supplied)

REMOTE 2 (automatic printing connector):

Stereo mini jack: × 1

For RM-91 Remote Control Unit or FS-20/36 Foot Switch (not supplied) (see "Selecting the Operation Mode for Automatic Printing Capabilities" page 85)

RS-232C (Computer control interface):

D-SUB 25-pin connector × 1

Output: 3 kilohms at load

Type ± 8 V

Input: 5-kilohm load

High level 5 to 15 V

Low level -5 to -15 V

STROBE (× terminal): (only for UP-2300P)

(see "Output timing of synchronous signal for electronic flash")

Supplied accessories

Color printing pack (1)

Paper tray (1)

Paper cover (1)

AC power cord (1)

Warranty card (1)

(for UP-2900MD/2950MD)

Instructions for Use (1)

Optional accessories

UPC-2010 color printing pack

Self-laminating color printing pack

UPC-2040A

16-split Self-adhesive Pre-cut color printing pack UPC-20S16E

4-split Self-adhesive Pre-cut color printing pack UPC-20S4ME

Color Postcard printing pack

UPC-2070E

B/W printing pack

UPC-2020

UPA-2001 paper ejector

UPA-2002 paper tray

RM-5500 remote control unit

RM-91 remote control unit

FS-20 foot switch

FS-36 foot switch

## Using the automatic printing capabilities (REMOTE 2)

If you send the remote control pulse signals

illustrated through the REMOTE 2 connector, the

printer is remotely controlled according to the

remote control setting. (see page 85)

Turn on the power of the printer and display the

source image on the monitor screen. Send a remote

control pulse signal at the timing shown below.

The timing depends on the setting on item

IMMED. CAP of the FUNCTION SETUP menu.

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

Remote 2 connector pin assignment

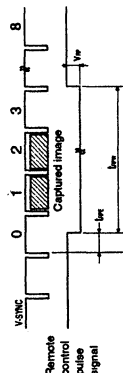
Remote 2 connector pin assignment

## Specifications (continued)

**Note**

When **AUTO LIVE** of the **FUNCTION-SETUP** menu is set to **OFF**, the memory image is displayed on the screen after the image is captured in memory. In such a case, whenever you store the image, press the **SOURCE/MEMORY** button so that the source image appears on the video monitor. Displaying the memory image does not allow to capture the image with the correct timing.

When **IMMED. CAP.** is set to **ON**

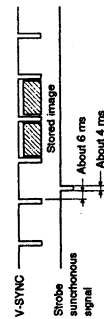


| Notation | Parameter                                                           | MIN | TYP | MAX | Unit | Remarks                               |
|----------|---------------------------------------------------------------------|-----|-----|-----|------|---------------------------------------|
| fRPE     | Time within which a remote control pulse should be cleared to zero. | 3   | —   | 10  | msec | —                                     |
| fRPW     | Length of a remote control pulse.                                   | 100 | —   | —   | msec | —                                     |
| VRP      | Amplitude of a remote control pulse.                                | —   | —   | 5   | V    | This value is based on TTL standards. |

**Note**

This mode is effective only the source image is displayed on the monitor screen. If the memory image is displayed, the image will not be captured even if the pulse is sent to the printer. Be sure to display the source image when sending the pulse.

## Output timing of the synchronous signal for electronic flash



Design and specifications are subject to change without notice.

## Error/Warning Messages

There are two kinds of messages: error messages and warning messages. This section lists these messages together with their possible causes and remedies. Note the messages and act accordingly.

**Error messages**

If a problem occurs, the **ALARM** lamp lights orange and an error message stating the problem appears on the monitor and in the printer window display.

| Message                      | In the printer window display    | Possible cause and remedies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MECHA TROUBLE: HEAD</b>   | <b>MECHA TROUBLE HEAD</b>        | <ul style="list-style-type: none"> <li>The ink ribbon cartridge is not loaded correctly.               <ul style="list-style-type: none"> <li>→ Check the ink ribbon cartridge and load it correctly. (page 9)</li> </ul> </li> <li>The paper has jammed inside the printer.               <ul style="list-style-type: none"> <li>→ Check the position where paper has jammed and remove any jammed paper from the printer. (page 105)</li> </ul> </li> </ul>                                                                                                    |
| <b>MECHA TROUBLE: TRAY</b>   | <b>MECHA TROUBLE TRAY</b>        | The paper tray has got out of position.<br>Contact your Sony service facility or your Sony dealer to clear error status.                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MECHA TROUBLE: PLATEN</b> | <b>MECHA TROUBLE PLATEN</b>      | The paper has jammed inside the printer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MECHA TROUBLE: LOAD</b>   | <b>MECHA TROUBLE LOAD PAPER</b>  | → Check the position where paper has jammed and remove any jammed paper from the printer. (page 105)                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>MECHA TROUBLE: EJECT</b>  | <b>MECHA TROUBLE EJECT PAPER</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>MECHA TROUBLE: CHUCK</b>  | <b>MECHA TROUBLE CHUCK</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>CHECK RIBBON</b>          | <b>CHECK RIBBON</b>              | <ul style="list-style-type: none"> <li>The ink ribbon cartridge is defective.               <ul style="list-style-type: none"> <li>→ Replace the defective ink ribbon cartridge with the new one.</li> </ul> </li> <li>The ink ribbon has torn.               <ul style="list-style-type: none"> <li>→ Repair the tear. (page 11)</li> </ul> </li> <li>The ink ribbon cartridge that can not be used with this printer has been loaded.               <ul style="list-style-type: none"> <li>→ Load the appropriate ink ribbon cartridge.</li> </ul> </li> </ul> |
| <b>PAPER JAMMING</b>         | <b>PAPER JAMMING</b>             | The paper has jammed inside the printer.<br>→ Check the position where paper has jammed and remove any jammed paper from the printer. (page 105)                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>SENSOR TROUBLE</b>        | <b>SENSOR TROUBLE</b>            | Sensor trouble has occurred.<br>The printer must not be operated any further. Turn off the power immediately and contact your Sony service facility or your Sony dealer.                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>REMOVE PAPER COVER</b>    | <b>REMOVE PAPER COVER</b>        | The paper jammed around the top cover.<br>Open the top cover and remove any jammed paper.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>END OF RIBBON</b>         | <b>END OF RIBBON</b>             | The ink ribbon has been exhausted.<br>Replace the old one with a new ink ribbon cartridge. (see page 9) (The ink ribbon cannot be reused.)                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>INSERT RIBBON</b>         | <b>INSERT RIBBON</b>             | The ink ribbon cartridge is not loaded.<br>→ Load the ink ribbon cartridge. (page 9)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>SET PAPER</b>             | <b>SET PAPER</b>                 | <ul style="list-style-type: none"> <li>Paper has been exhausted.               <ul style="list-style-type: none"> <li>→ Load the paper. (see page 12)</li> </ul> </li> <li>The paper tray is not installed.               <ul style="list-style-type: none"> <li>→ Install the paper tray. (page 12)</li> </ul> </li> </ul>                                                                                                                                                                                                                                      |

Continue to next page →

## Error/Warning Messages (continued)

| Message                                         |  | Possible cause and remedies                                                                                                                     |
|-------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------|
| On the monitor                                  |  | In the printer window display                                                                                                                   |
| INSERT RIBBON AND PAPER INSERT RIBBON SET PAPER |  | The ink ribbon cartridge and paper are not loaded.<br>→ Load the ink ribbon cartridge and paper. (pages 9 and 12)                               |
| REMOVE PRINTS                                   |  | REMOVE PRINTS<br>The maximum number of printouts has accumulated on the paper cover.<br>→ Remove the printouts from the paper cover.            |
| REMOVE PAPER TRAY                               |  | REMOVE PAPER TRAY<br>The paper jams around the paper tray as it is being fed into the ribbon area.<br>→ Remove any jammed paper. (see page 105) |
| CLOSE COVER                                     |  | CLOSE COVER<br>The top cover opens<br>→ Close the top cover.                                                                                    |

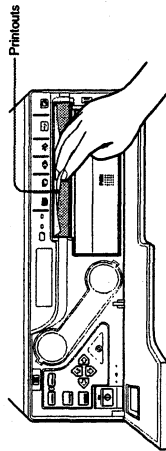
  

| Warning messages            |  | Possible causes and remedies                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On the monitor              |  | In the printer window display                                                                                                                                                                                                                                                                                                                                                                            |
| PLEASE WAIT NOW PRINTING    |  | PLEASE WAIT NOW PRINTING<br>The printer is printing, preventing any other operation.<br>→ Wait until the printer finishes printing, then retry the operation.                                                                                                                                                                                                                                            |
| HIT ANY KEY                 |  | HIT ANY KEY<br>This message appears when the remote control unit is used in CAPTURE STOP mode and when the printer stops capturing images to memory pages once images have been captured to all memory pages.<br>→ Press any button. Printer operation is enabled after this.                                                                                                                            |
| INPUT MISMATCH              |  | INPUT MISMATCH<br>The TV system of the signal input from the source equipment (VTR, video camera and so on) is not compatible with the TV system of your printer.<br>→ Check the signal of TV system and input the correct one.<br>• The signal other than the video signal (such as audio signal and similar) is input.<br>→ Input the correct video signal.                                            |
| PLEASE WAIT RESERVED MEMORY |  | PLEASE WAIT RESERVED MEMORY<br>Printing is queued for the selected memory page.<br>→ Retry the operation once the printer finishes printing.                                                                                                                                                                                                                                                             |
| PLEASE WAIT PRINTING MEMORY |  | PLEASE WAIT PRINTING MEMORY<br>The image captured in the selected memory page is being printed.<br>→ Retry the operation once the printer finishes printing.                                                                                                                                                                                                                                             |
| NO INPUT                    |  | NO INPUT<br>The printer is not receiving an input signal from equipment corresponding to the input selected on the INPUT SETUP menu.<br>→ Check the input signal selected on the INPUT SETUP menu. (page 14)<br>→ Check whether the video equipment is outputting a video signal in playback mode.<br>→ Check that the connections between signal source equipment and the printer are secure. (page 65) |
| NO IMAGE                    |  | NO IMAGE<br>The image is not captured in memory.<br>→ Capture the image in memory then start printing. (page 16)                                                                                                                                                                                                                                                                                         |
| PLEASE WAIT HEAD IN COOLING |  | PLEASE WAIT HEAD IN COOLING<br>The thermal head has overheated.<br>→ Leave the printer until the head cools down and this message disappears. The printer starts printing automatically.                                                                                                                                                                                                                 |
| PLEASE WAIT SET IN COOLING  |  | PLEASE WAIT SET IN COOLING<br>The inside of the printer has overheated.<br>→ Leave the printer until its inside cools down and this message disappears. The printer starts printing automatically.                                                                                                                                                                                                       |

## If the paper jams

If the paper jams after pressing the PRINT button, the message stating that paper jammed appears on the video monitor and in the printer window display. Follow the steps below to remove the jammed paper. When the jammed paper is removed, you do not need to continue operation explained below. Stop operation and reset removed paper cover, paper tray or ink ribbon holder if any.

- 1 Open the front panel.
- 2 If any printouts have been ejected to the paper cover and have accumulated on the paper cover, remove them. If not go to the next step.



- 3 Turn off the power of the printer.

- 4 Remove the paper tray.

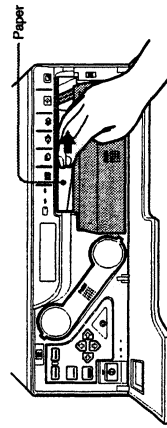
When you can see paper inside the printer, go to step 5. When you cannot see paper, go to step 8.

- 5 Slowly pull the paper into the paper tray.

### Note

Never attempt to pull a jammed paper down, up, backwards, or forwards. The paper may tangle or tear.

If you cannot pull the paper, go to the next step.



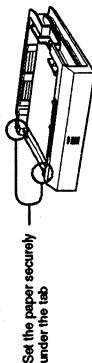
- 6 Remove the paper tray.

If the paper has jammed around the slot where the paper is fed, remove it.

Continue to next page →

# Error/Warning Messages (continued)

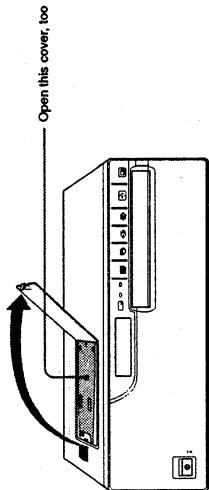
- 7 Load the paper into the paper tray correctly.  
Do not reuse the paper put back in step 5. Discard that paper.



- 8 Remove the ink ribbon cartridge.  
If there is a jammed paper, slowly pull out the paper.  
If the ink ribbon cartridge cannot be removed, the printer must not be operated. Contact your Sony service facility.

When you cannot see the jammed paper, go to step 9.

- 9 Open the top white cover, then the black cover.  
If the paper has jammed inside, slowly pull the paper out.  
If the jammed paper cannot be removed, the printer must not be operated. Contact your Sony service facility.



- 10 Re-insert the removed paper tray, paper cover or ink ribbon cartridge if you removed, then close the front panel.

- 11 Turn on the power of the printer.  
When the message does not appear, you can use the printer as normal.  
However, the image captured to memory have been cleared. Capture the image to memory again.  
If the same message appears again, the printer must not be operated. Turn off the power immediately and contact your Sony service facility.

## Note

Do not open the top cover during printing because of mechanical hazard. If you do, turn off the power switch of the printer.

# Troubleshooting

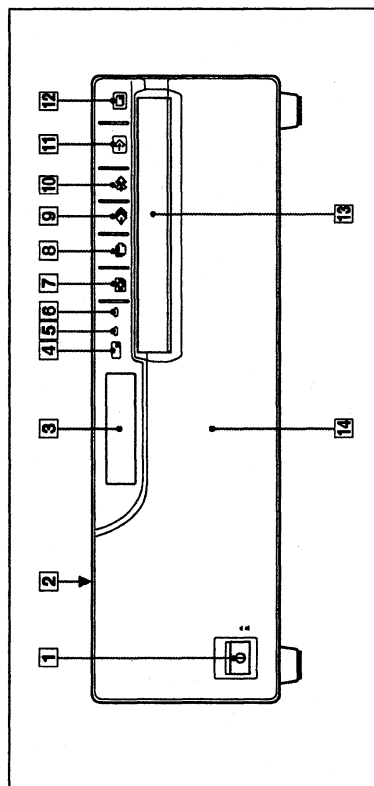
The following troubleshooting checks will help you correct the most common problems you may encounter with your unit. Before proceeding with these trouble checks, first check that the power cord is firmly connected. Should the problem persist, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

| Symptoms                                                                | Possible causes and remedies                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nothing appears on the monitor even if you press any operation buttons. | • The POWER switch of the printer is not set to ON.<br>→ Set the POWER switch of the printer to ON.<br>• The POWER switch of the monitor is not set to ON.<br>→ Set the POWER switch of the monitor to ON.<br>• Connections may not be correct.<br>→ Check connections and rectify, if necessary. (see page 65)                                                                                             |
| No message appears on the regular screen.                               | The incorrect signal is input.<br>→ Select another input signal by using the INPUT SETUP menu (see page 14) Or, set the connected video equipment to playback mode, if it is currently set to another mode such as stop mode.<br>→ In this case, first check the monitor by pressing the SOURCE/MEMORY button to display the image stored in memory. If an image appears, the monitor is working correctly. |
| No message or image appears on the regular screen.                      | If an image captured in memory appears when the SOURCE/MEMORY button is pressed, SOURCE on the OUTPUT SETUP menu is set to THRU.<br>→ Change the SOURCE setting to EE. (see page 72)                                                                                                                                                                                                                        |
| The printer does not print.                                             | An error message appears on the display.<br>→ Perform the steps described in "Error Messages" on page 103.                                                                                                                                                                                                                                                                                                  |
| A black line appears on the printout.                                   | Any portion for which there is no signal is printed in black.<br>→ Shift the printout area. Capture a new image and print it. (see page 82)                                                                                                                                                                                                                                                                 |
| The printer produces a printout with a black frame.                     | Any portion for which there is no signal is printed in black.<br>→ Make the printout narrower. Capture a new image and print it. (see page 82)                                                                                                                                                                                                                                                              |
| The printed image is partially cut out.                                 | Only part of the video signal has been stored.<br>→ Make the printout size wider. (see page 82) Capture a new image and print it.                                                                                                                                                                                                                                                                           |
| The printout is blurred.                                                | A quickly moving image has been stored.<br>→ Set MEMORY on the LAYOUT SETUP menu to FIELD.                                                                                                                                                                                                                                                                                                                  |
| The printout color is very pale.                                        | The paper is not loaded correctly.<br>→ Check which side of the paper is the printing side, then load the paper again. (see page 12).                                                                                                                                                                                                                                                                       |

## Location and Function of Parts and Controls

For details, refer to the pages given in parentheses.

### Front



- 1** **POWER switch (14)**  
Press to turn the printer on or off.
- 2** **Top cover (on the top panel)**  
Usually, do not open this top cover. Only in case the paper has jammed inside the top cover, open the top cover to remove a jammed paper.  
If you open the top cover, there is the other black cover.
- 3** **Printer window display (only for UP-2800P/2850P/2900MD/2950MD)**  
Displays the messages that also appear along bottom edge of the monitor screen. Also displays the menu screen line to which the cursor is positioned. If an error occurs, a corresponding error message is displayed. The printer window display can be cleared with the SYSTEM SETUP menu.
- 4** **Remote sensor (64)**  
Aim the head of the remote control unit toward this sensor.
- 5** **PRINT lamp**  
Lights while the printer is printing.
- 6** **ALARM lamp (103)**  
Lights in orange when the ink ribbon or paper is exhausted, the paper jams, or another problem occurs.
- 7** **MULTI PICTURE button (35, 41, 48)**  
Press this button to select the desired printout type. When you press this button, the currently selected printout type lights green for two or three seconds. Each time you press this button, the type lights green in the order.  
In FLEX IPP mode, this button is used to select the LOAD SIZE number to load the preset size of the image. When you press this button, the currently selected LOAD SIZE number lights green for two or three seconds. Each time you press this button, the LOAD SIZE number lights green in the order.

- 8** **PRINT QTY (quantity) button (21)**  
Press this button to set the number of copies. You can set any number up to 9. You can change the number even when the printer is printing.  
However, you cannot decrease the number of copies using this button. In such a case, reduce the number of copies on the PRINTER SETUP menu. (see page 19)

- 9** **MEMORY PAGE button (22, 31, 43, 48, 49, 60)**  
Press to select the memory page.

- 10** **SOURCE/MEMORY button (17, 40, 48, 49, 60)**  
Press to select which signal is to be output to the monitor.  
The memory image and source image are toggled each time you press this button.

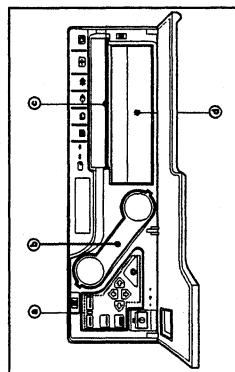
- 11** **CAPTURE button (17, 22, 40, 41, 48, 49)**  
Press to capture an image to a memory page.

- 12** **PRINT button (17, 18, 23, 41, 43, 48, 49)**  
Press to make a printout.

- 13** **Paper ejection slot**  
The printout is ejected here.

- 14** **Front door**  
Pull the top on the front door toward you to open it.  
Opening the front panel reveals the sub panel buttons, ink ribbon cartridge, paper tray and paper cover.

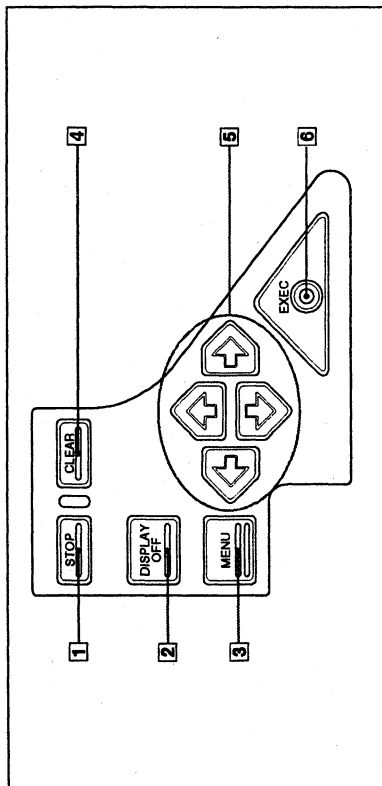
When the front panel is open



- 9** **Sub panel keys**  
For details, see "Sub Panel"
- 10** **Ink ribbon cartridge (9, 62)**  
Insert the ink ribbon cartridge.
- 11** **Paper cover (62)**  
Paper is ejected onto this cover.
- 12** **Paper tray (12, 62)**  
Load paper into this tray.

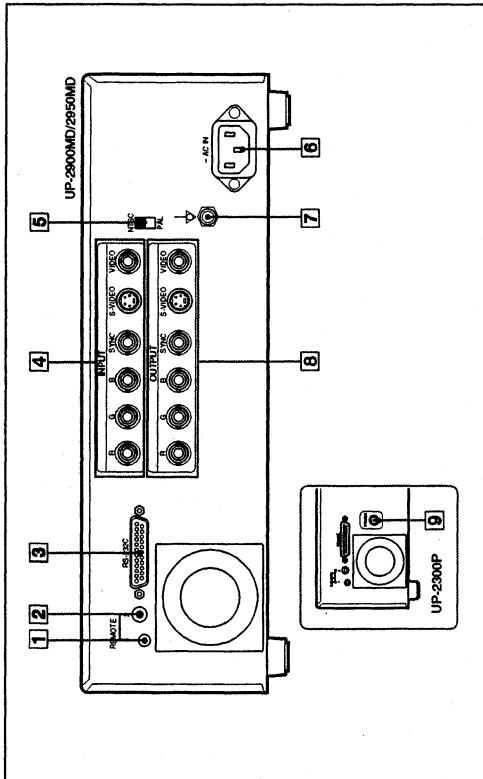
# Location and Function of Parts and Controls (continued)

## Sub Panel



- 1 STOP button (18)**  
Press to stop printing midway. By pressing this button, the current printing complete and printing after this is cancelled.
- 2 DISPLAY OFF (18)**  
When the menu is displayed, pressing this button temporarily clears the menu display. While this button is held down, the menu display disappears.  
When the regular screen is displayed, pressing this button toggles on and off of the screen display (such as messages, Q1, A and similar) regardless of setting of the item of DISPLAY on the OUTPUT SETUP menu
- 3 MENU button**  
Press this button to display or clear the menus on the screen and printer window displays.
- 4 CLEAR button (59, 60)**  
Press this button to clear the images captured in the memory pages. Which images that can be cleared with the CLEAR button depends on the setting made with the FUNCTION SETUP menu.
- 5 Cursor keys**  
Use to select a desired item from the menu by pressing the  $\uparrow$  or  $\downarrow$  button and set the value by pressing the  $\leftarrow$  or  $\rightarrow$  button.  
Also, these keys are used to position the cursor (green ) on the regular screen.
- 6 EXEC button (52, 53, 55, 79)**  
Press this button to execute the values set with the COLOR ADJUST menu or to register a setting to the SAVE SIZE number on the SYSTEM SETUP menu. Also, this button is used to enter the characters of a caption.

## Rear



- 1 REMOTE 1 connector (special mini jack) (67)**  
Used to connect the RM-5500 Remote Control Unit (not supplied) to be used as wired remote control unit.
  - 2 REMOTE 2 connector (stereo mini jack) (67, 101)**  
Used to connect the RM-91 Remote Control Unit (not supplied), the FS-20 or FS-36 Foot Switch. Or input remote control pulse signals for automatic printing.
  - 3 RS-232C connector (67)**  
Used to connect the computer to control the printer. For details, contact your nearest Sony dealer.
  - 4 INPUT (input signal) connectors (65)**  
Used to connect the video equipment supplying the source image.
- | Connector              | Connectable equipment                                        |
|------------------------|--------------------------------------------------------------|
| S-VIDEO                | Video equipment with Y/C separated output connector.         |
| VIDEO                  | Video equipment with composite video signal output connector |
| RGB SYNC <sup>a)</sup> | Video equipment with RGB/SYNC output connectors.             |
- <sup>a)</sup> Models other than the UP-2800P are equipped with the RGB/SYNC connectors.  
Refer to "Important safeguards/notices for use in the medical environments" on page 2.

Continue to next page →

## Location and Function of Parts and Controls (continued)

- 5 NTSC/PAL (NTSC/PAL TV) selector**  
(only for UP-2900MD/2950MD) (65, 66)  
Set this selector according to the TV system of the input signal. If you change this setting, turn the printer power off, then back on again.

| Selector position | When setting                                  |
|-------------------|-----------------------------------------------|
| NTSC              | The NTSC system video equipment is connected. |
| PAL               | The PAL system video equipment is connected.  |

- 6 ~ AC IN connector**  
Used to connect the printer to a wall outlet with the supplied power cord.

- 7 Equipotential ground terminal connector V (for models other than UP-2300P)**  
Used to connect to the equipotential plug to bring the various parts of a system to the same potential.  
Refer to "Important safeguards/notices for use in the medical environment" on page 2.

- 8 OUTPUT connectors (66)**  
Used to connect the video monitor.

| Connector | Connectable equipment                                          |
|-----------|----------------------------------------------------------------|
| S-VIDEO   | Video equipment with V/C separated output connector.           |
| VIDEO     | Video equipment with composite video signal output connector.  |
| RGB SYNC  | Video equipment with RGB/SYNC output connectors. <sup>a)</sup> |

<sup>a)</sup> Models other than the UP-2300P are equipped with the RGB/SYNC connectors.  
Refer to "Important safeguards/notices for use in the medical environment" on page 2.

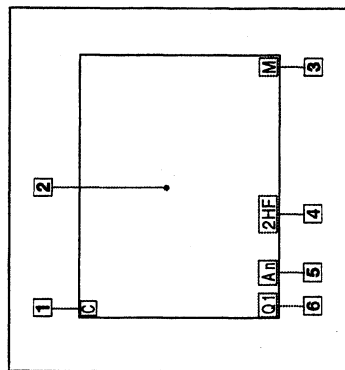
- 9 STROBE (X-terminal) (only for UP-2300P)**  
Used to connect to an electronic flash which lights at instance the image is captured in the memory.

## Monitor Display

There are two types of display: the regular screen display and menu screen display.  
The two types of display are explained using the monitor display.

### Regular screen display

When you first turn on the printer, the regular screen message appears.



- 1 C (Caption) display section**

C is displayed in white when the printer is set to print a caption consisting of the date and/or comments.

- 2 Message display section**

Messages are displayed.

- 3 S or M (Image type) display section**

This indicates the type of image being displayed on the monitor screen.  
S (Source): The image from the input signal source is displayed on the screen.  
M (Memory): The image stored in memory is displayed on the screen.

- 4 Printer operation mode display section**

| Display             | Meaning                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 1, 2, 2H, 4, 16     | Indicates the printout type in STANDARD mode.                                                                                    |
| 2 * 2, etc.         | Indicates the number of images to be printed in one (2 * 2) in this case, four images are printed in one paper in FLEX IPP mode. |
| IPP1, IPP4, etc.    | Indicates the printout type in FLEX IPP.                                                                                         |
| STK-DUP4, STK-DUP16 | Indicates the sticker mode in which identical four- or 16-reduced images are printed in one paper in DTIK DUP mode.              |
| STK-DIF4, STK-DIF16 | Indicates the sticker mode in which different four- or 16-reduced images are printed in one paper in DTIK DIF mode.              |

<sup>a)</sup> When the SEPARATE (image with the white borders) is set to ON on the LAYOUT SETUP menu, F is attached. For example, 4F.

- 5 Memory page display section**

Indicates the currently selected memory page.  
While the image in the memory page is being printed, the memory page indication blinks. The memory page whose memory image is queued to be printed lights in green.

- 6 Q (print quantity) display**

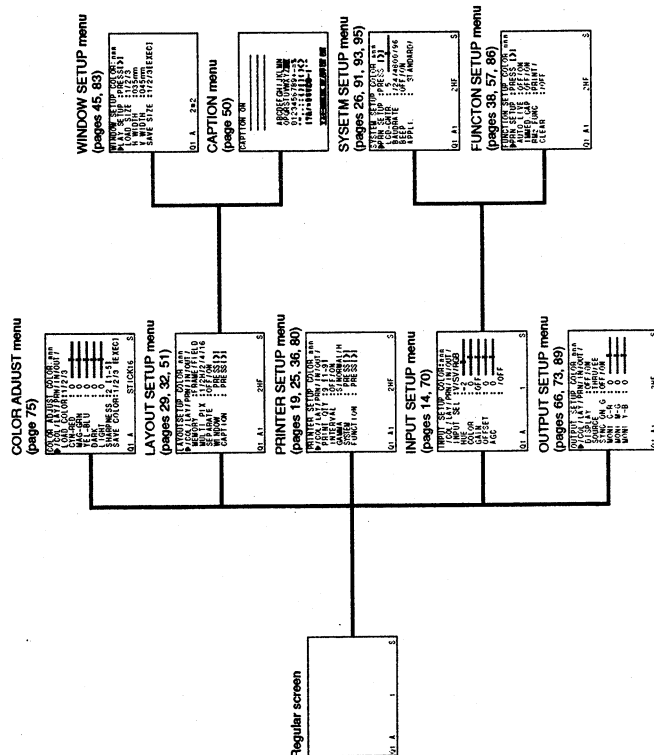
Indicates the number of copies to be printed.  
This item blinks while the printer is busy.

# Location and Function of Parts and Controls (continued)

## Menu screen

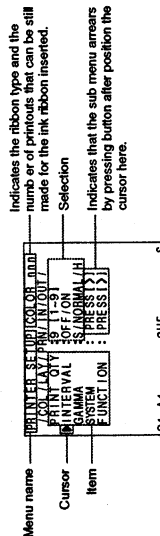
### Menu screen tree chart

The menu screen configuration is shown using the tree-chart. For details, refer to the pages indicated in ( ).



## Menu screen display

Example: SYSTEM SETUP menu screen



# Index

|                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                             |                                                                                                                                                                                                                                            |                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A, B</b><br>Accessories (supplied) 61<br>Adjusting<br>input signal 69<br>color of the printer's output signal 72<br>printout area 82<br>printout color 75<br>printout size 84<br>printout tone 80<br>sharpness of the printout 78<br>Automatic printing<br>pulse signal 101<br>Selecting operation mode 87<br>Baud rate for computer communication 95 | <b>F, G, H</b><br>Foot switch 63, 67, 85<br>Full-size printout<br>making 16<br>setting 33<br>FUNCTION SETUP menu 38, 57, 86 | <b>I, J, K</b><br>Identification photograph printout 43<br>Ink ribbon cartridge and paper 99<br>Ink Ribbon cartridge<br>loading 9<br>if your ink ribbon should tear 11<br>notes on storing 11<br>removing 9<br>Installation precautions 97 | <b>L</b><br>Loading an ink ribbon cartridge 9<br>Loading paper 12<br>Location and function of parts and controls<br>front 108<br>monitor display 113<br>rear 111<br>sub panel 110<br>Location precautions 98 | <b>M, N, O</b><br>Memory page<br>selecting the memory page 29<br>usable memory page 28<br>Menu<br>CAPTION input screen 50<br>COLOR ADJUST menu 75<br>FUNCTION SETUP menu 38, 56, 86<br>INPUT SETUP menu 14, 70<br>LAYOUT SETUP menu 29, 32, 51<br>OUTPUT SETUP menu 66, 73, 89<br>PRINTER SETUP menu 19, 25, 36, 80<br>SYSTEM SETUP menu 25, 91, 93, 95<br>WINDOW SETUP menu 45, 83<br>Menu screen tree chart 114<br>Monitor display 113 | <b>P, Q</b><br>Paper<br>ink ribbon and paper 99<br>loading 12<br>notes on storing 13<br>removing the jammed paper 105<br>Paper jams 105<br>Paper tray (not supplied) 99<br>Precautions<br>cleaning 98<br>condensation 97<br>installation 97<br>safety 97<br>transportation 98<br>Print quantity setting 19<br>PRINTER SETUP menu 19, 25, 36, 80<br>Printing<br>eliminating the blur 17<br>if a black line appears on the printout 18<br>if the image quality of printouts is not satisfactory 18<br>if the paper runs out during printing 21<br>if the printer does not print 17<br>if the stored image is blurred 17<br>making a full-size printout 16<br>making a printout for sticker 42<br>making a printout of multiple reduced images 32<br>making a printout of identical reduced images (for identification photograph) 43<br>making a printout with a caption 55<br>making a printout with an insert 41<br>Making printouts with white borders 34<br>printing remotely 63<br>selecting the memory page 31<br>selecting the printout type 32<br>storing another images while printing 22<br>Printing pack 99<br>Printout area 84<br>Printout color<br>color intensity 77<br>contrast 77<br>sharpness 78<br>Printout size 83<br>Printout quality<br>adjusting the printout color 75<br>compensating for the input signals 69<br>eliminating the blur 17<br>Printouts<br>with a black line 84<br>with black frame 83<br>partially cut 83<br>notes on storing 18<br>Printout variations 7, 24<br>Pulse signals 101, 102 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## Index (continued)

### R, S

- Remote control unit (not supplied)
  - foot switch 63, 67, 85
  - remote control unit 63, 67, 85
- Safety precautions 97
- Screen display
  - erasing 89
  - erasing temporarily 18
  - Selecting the input signal 14
  - Setting up the printer with menu
    - adjusting the printer window display
      - brightness 91
    - adjusting the printout color 75
    - adjusting the sharpness 78
    - changing the printout area/printout size 82
  - compensating for the input signal 69
  - erasing the screen display 89
  - selecting operation mode for automatic
    - printing capabilities 85
  - selecting whether to enable the
    - operation and error tones 93
  - setting baud rate for computer
    - communication 95
- Sharpness 78
- Specifications 100
- Sticker 42
- Supplied accessories
  - assembly 62
  - supplied accessories 61
- System configuration 8
- System overview 7
- SYSTEM SETUP menu 26, 91, 93, 95

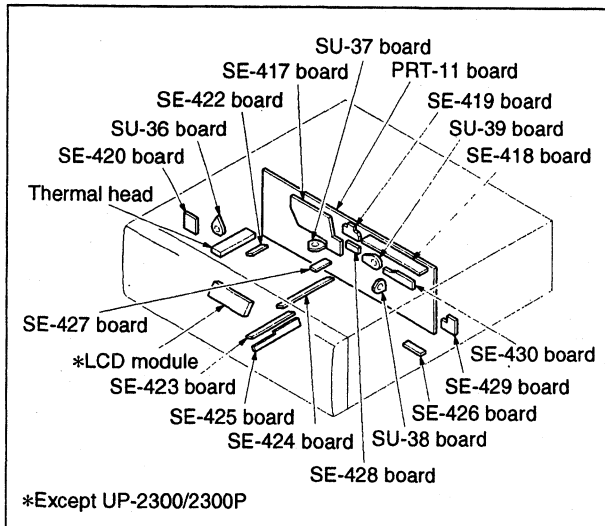
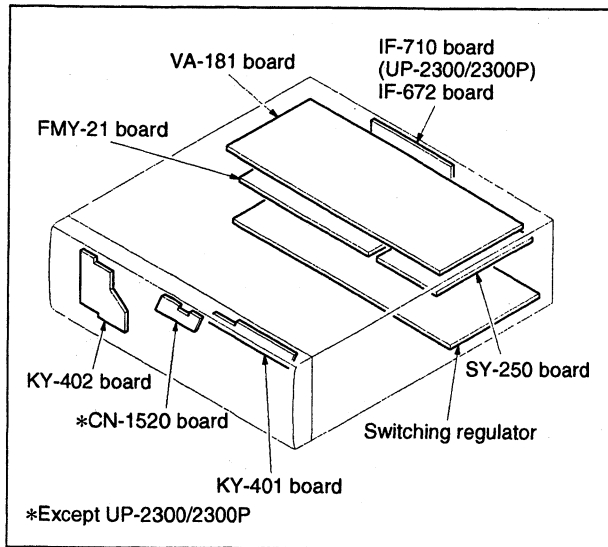
### T to W

- Troubleshooting 107
- Using the automatic printing capabilities
  - 85
- Warning messages 104



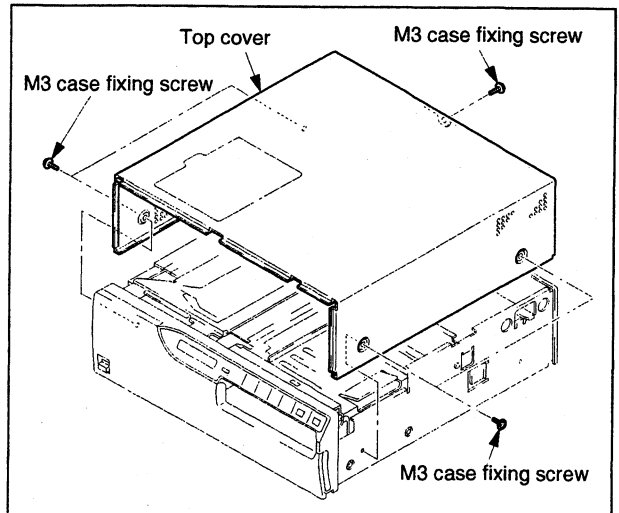
## SECTION 2 SERVICE INFORMATION

### 2-1. BOARD LAYOUT



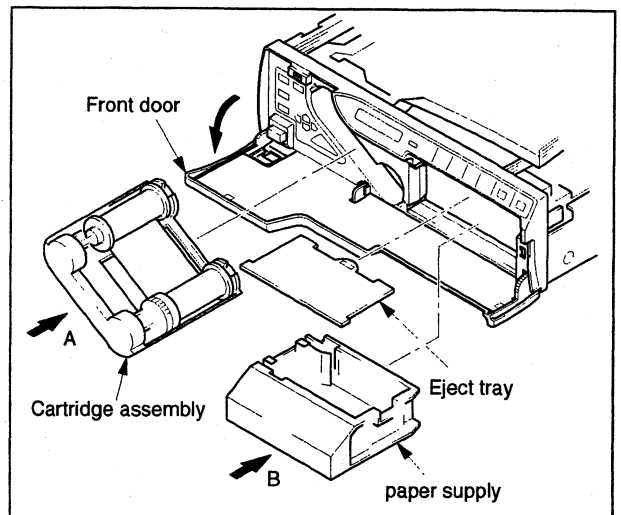
### 2-2. DISASSEMBLY

#### 2-2-1. Removal of the Top cover



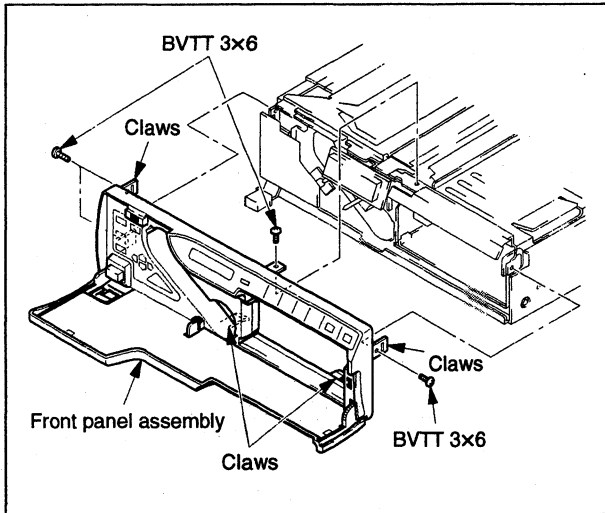
#### 2-2-2. Removal of the Front Panel Assembly

1.



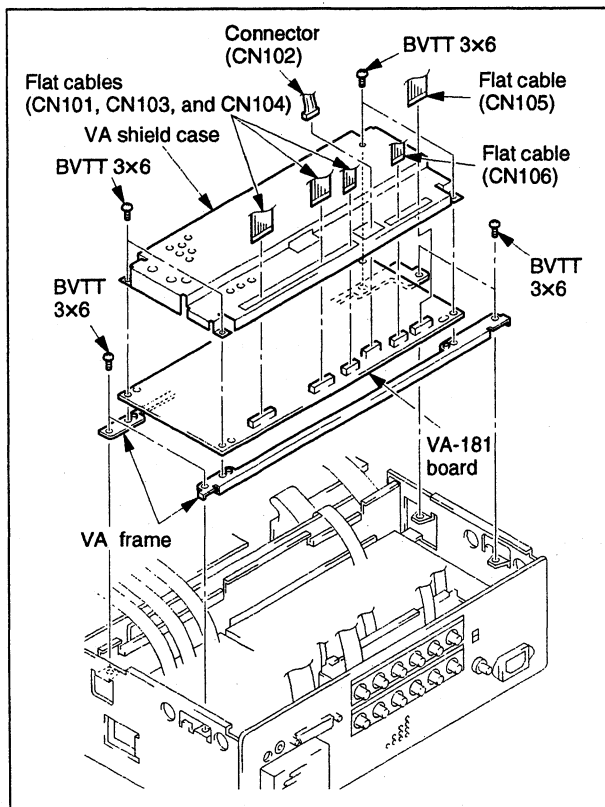
**Note :** Push the cartridge assembly and paper supply tray in the direction indicated by arrow A or B, then take out them.

2.



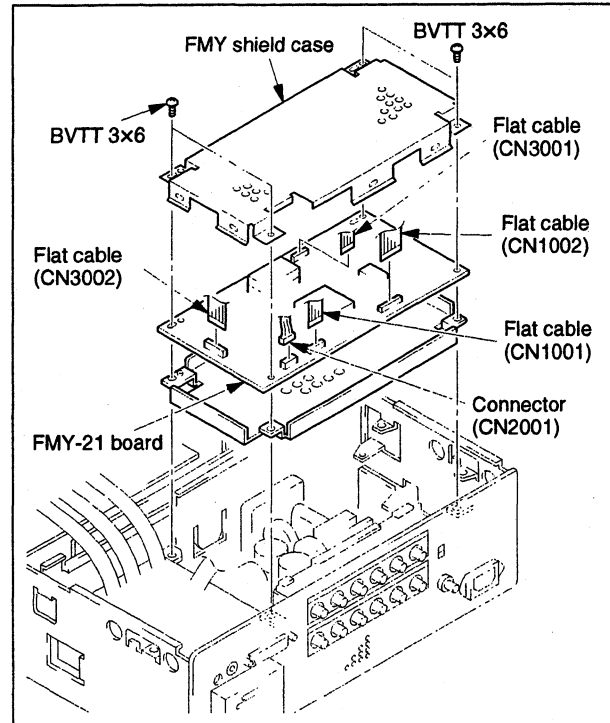
**Note :** Remove the four claws, then remove the front panel assembly.

### 2-2-3. Removal of the VA-181 board



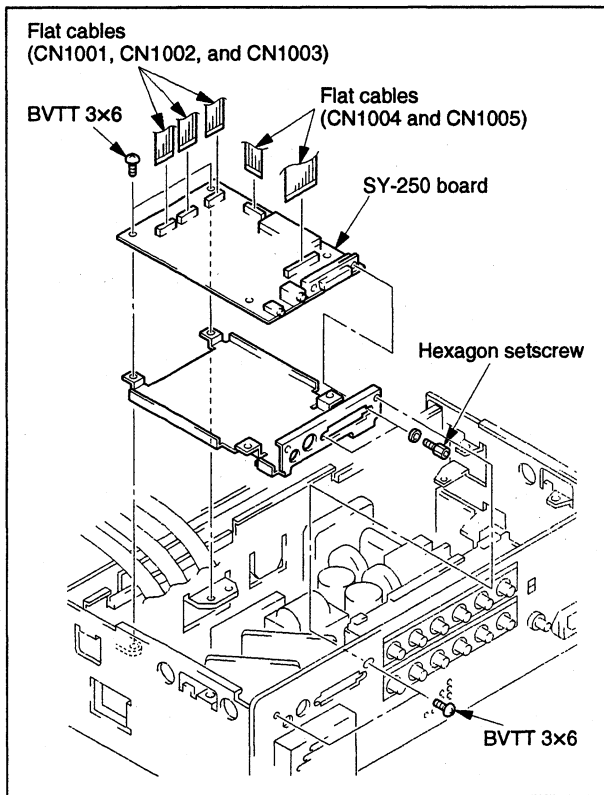
**Note :** VA shield case is only part for UP-2300P, UP-2800P, UP-2850P, UP-2900MD and UP-2950MD.

### 2-2-4. Removal of the FMY-21 Board

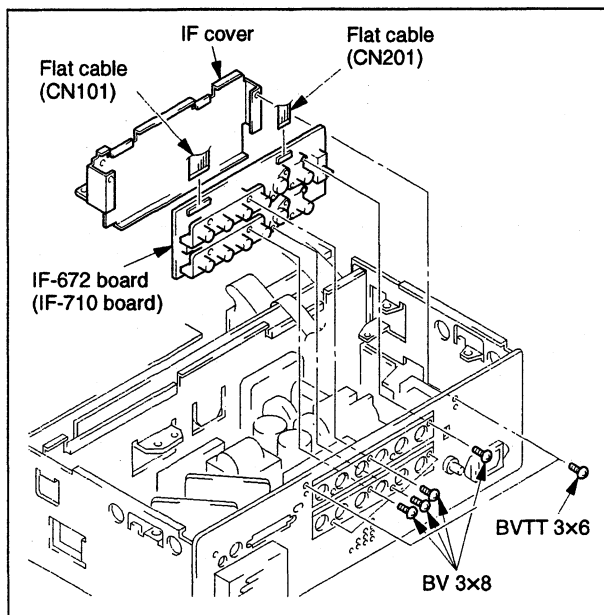


**Note :** FMY shield case is only part for UP-2300P, UP-2800P, UP-2850P, UP-2900MD and UP-2950MD.

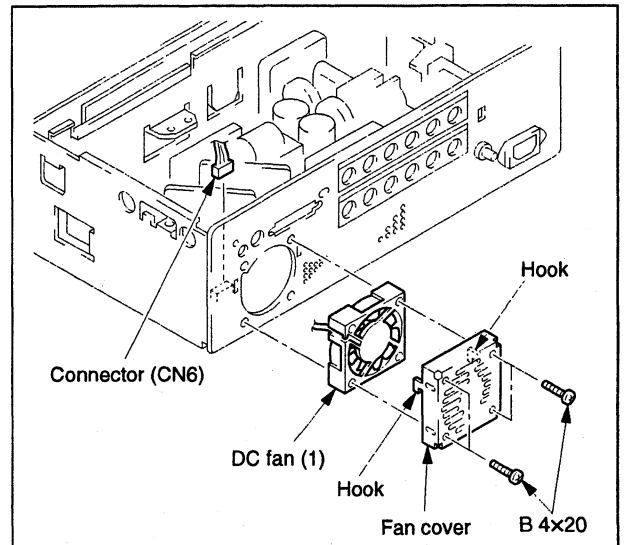
### 2-2-5. Removal of the SY-250 Board



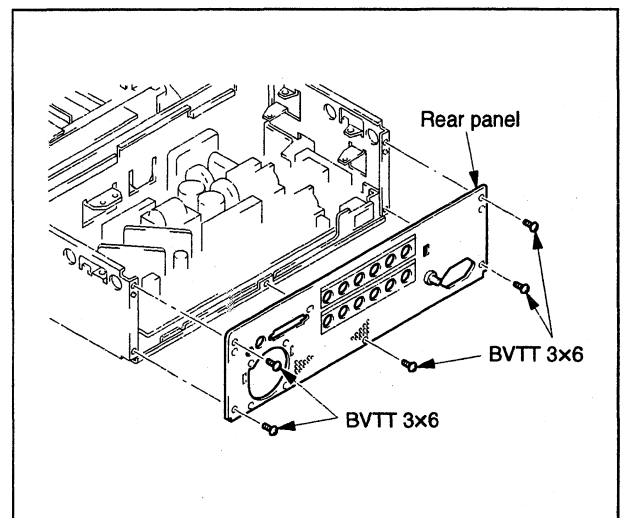
### 2-2-6. Removal of the IF-672 Board (IF-710 Board)



### 2-2-7. Removal of the DC Fan (1)

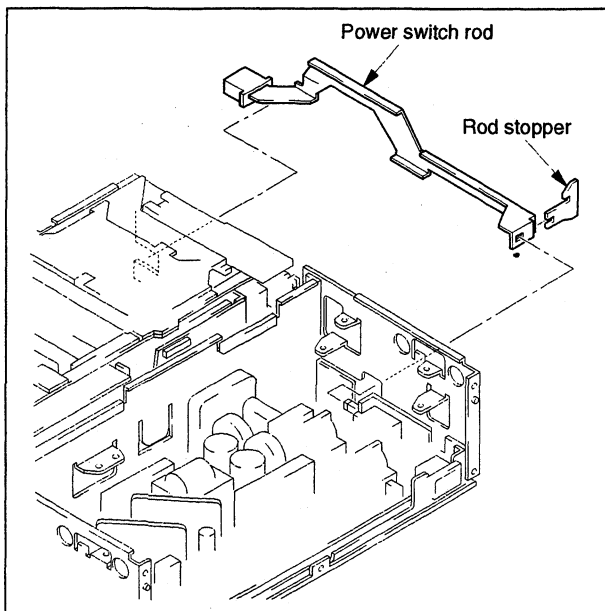


### 2-2-8. Removal of the Rear Panel

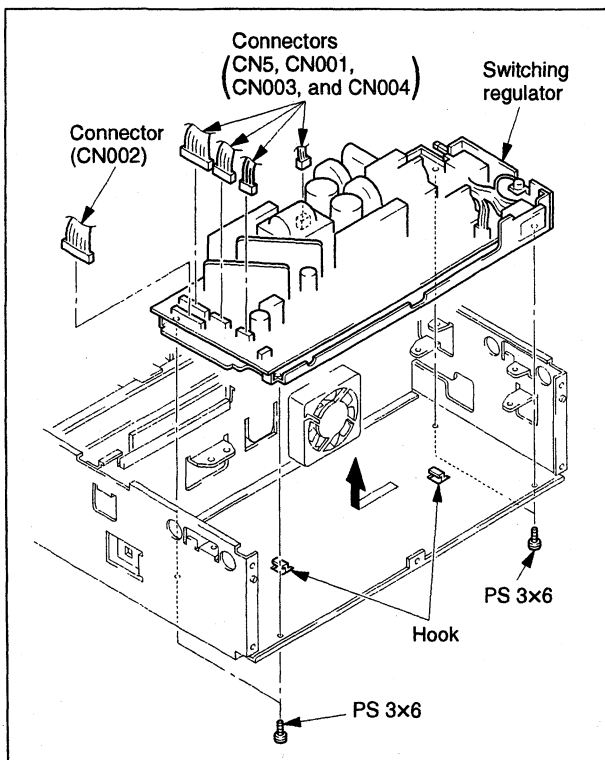


## 2-2-9. Removal of the Switching Regulator

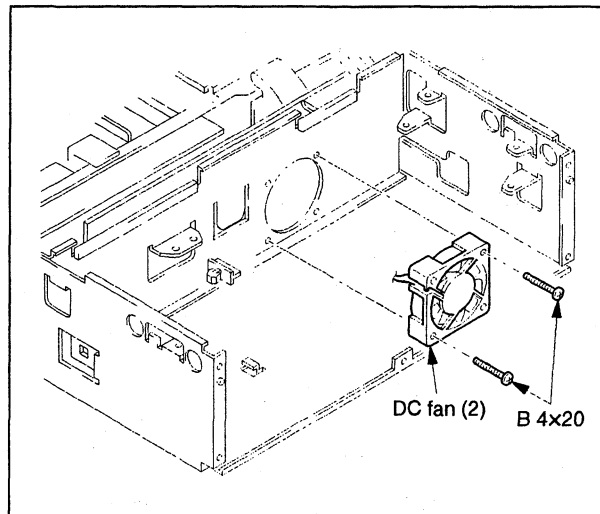
1.



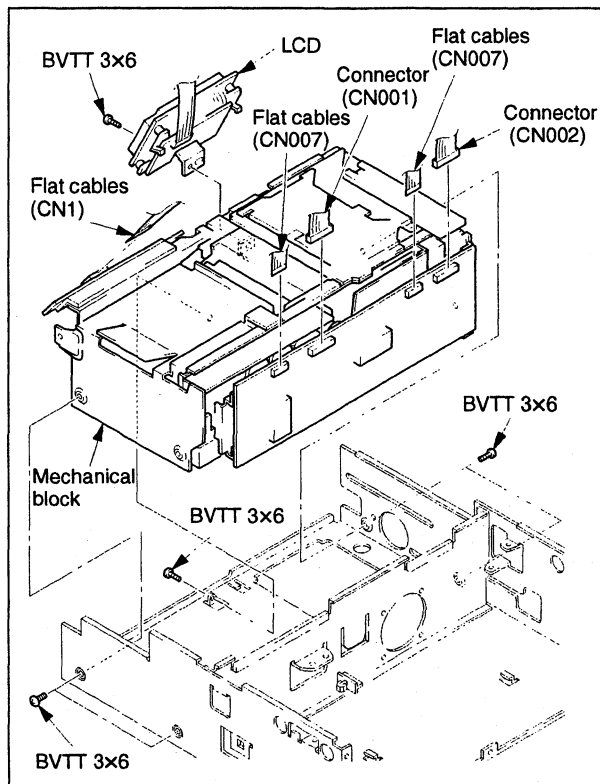
2.



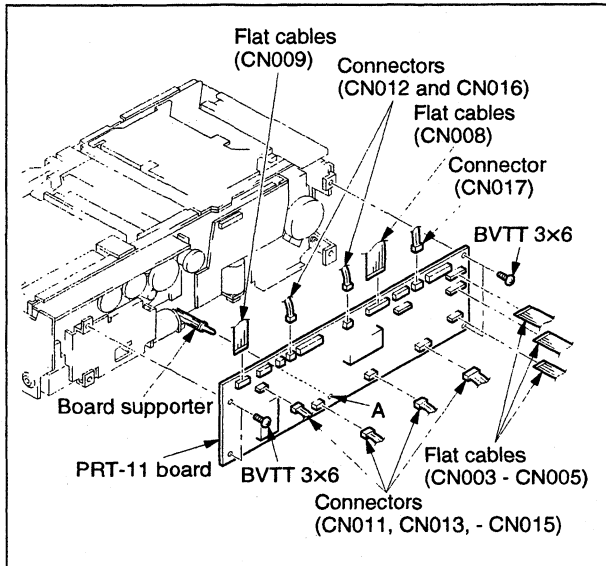
## 2-2-10. Removal of the DC Fan (2)



## 2-2-11. Removal of the Mechanical Block



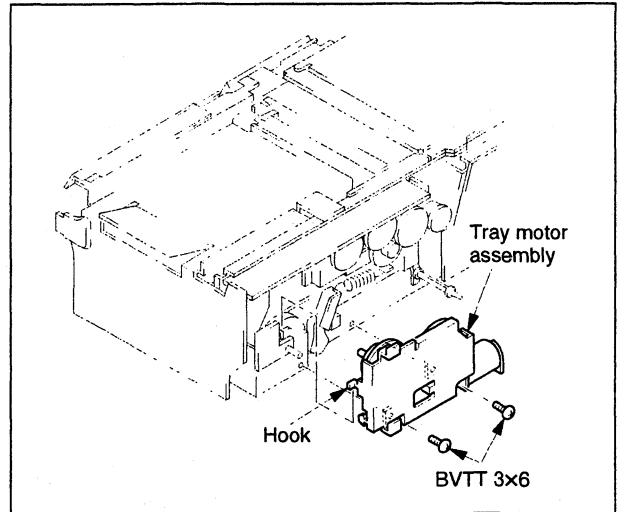
## 2-2-12. Removal of the PRT-11 Board



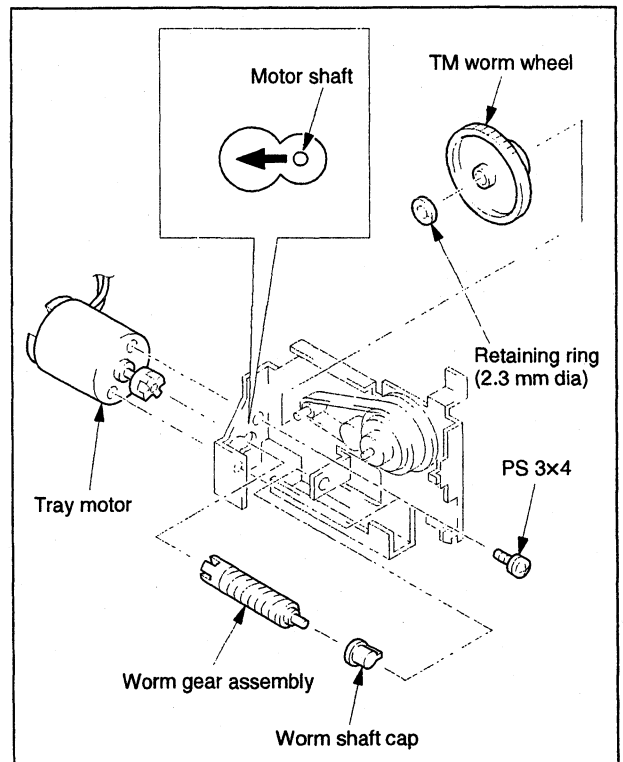
**Note :** When installing the PRT-11 board, insert the board supporter to the hole A of the board.

## 2-2-13. Removal of the Tray Motor

1.

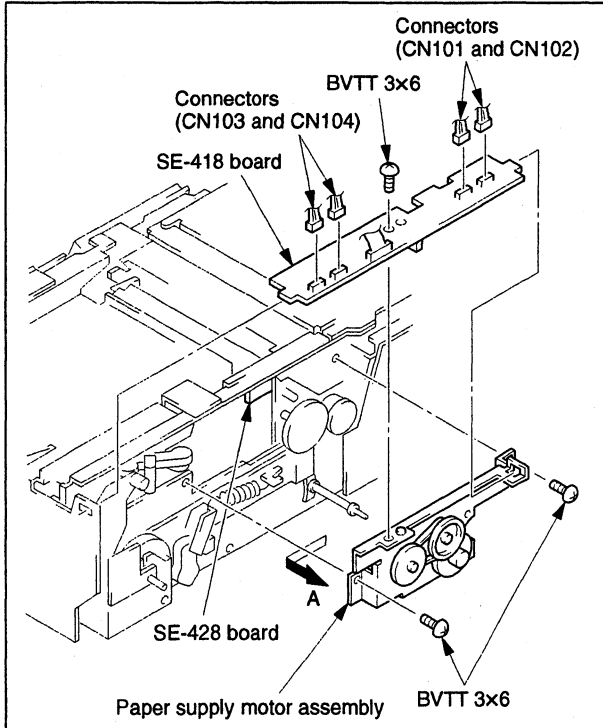


2.



## 2-2-14. Removal of the SE-418 Board and Paper Supply Motor

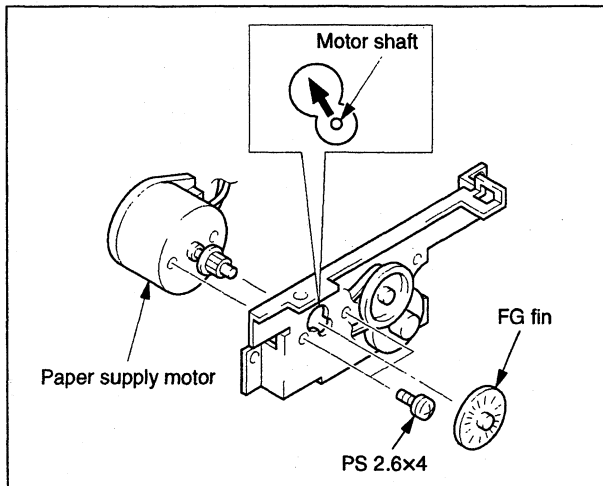
1.



**Notes :** When removing the paper supply motor assembly, remove it in the direction indicated by arrow A so as not to strike the SE-428 board.

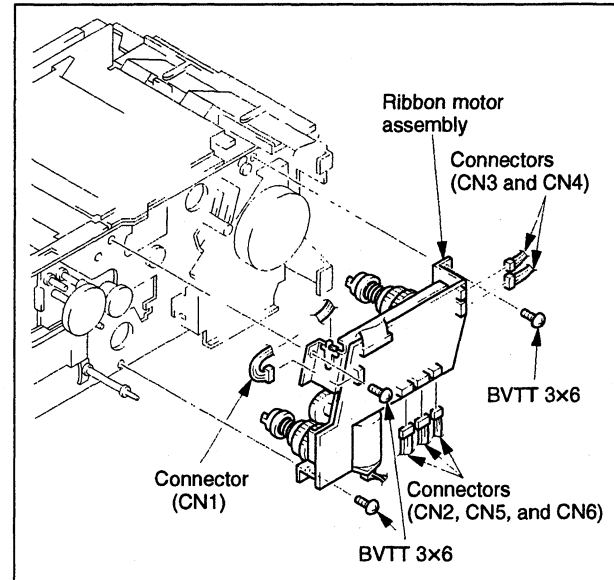
When reattaching it, approach it to the left down side and tighten the screws.

2.

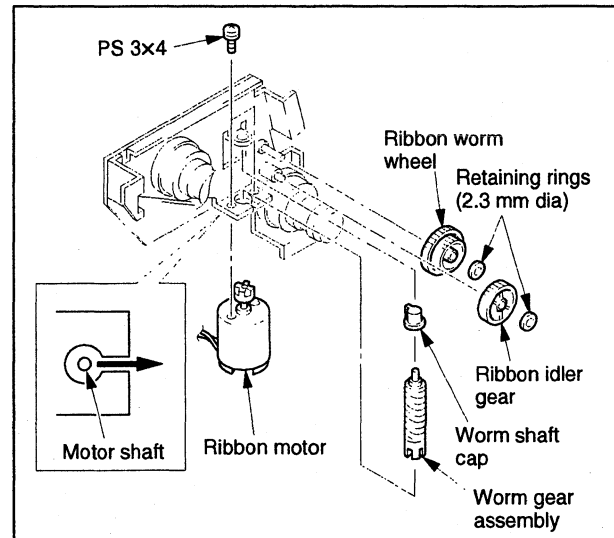


## 2-2-15. Removal of the Ribbon Motor

1.

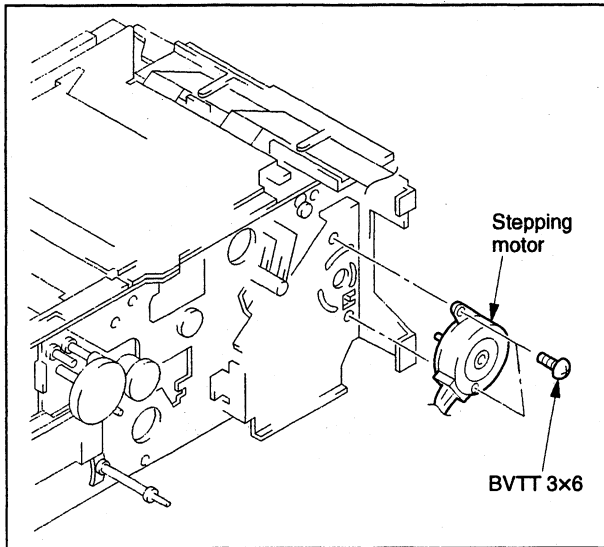


2.



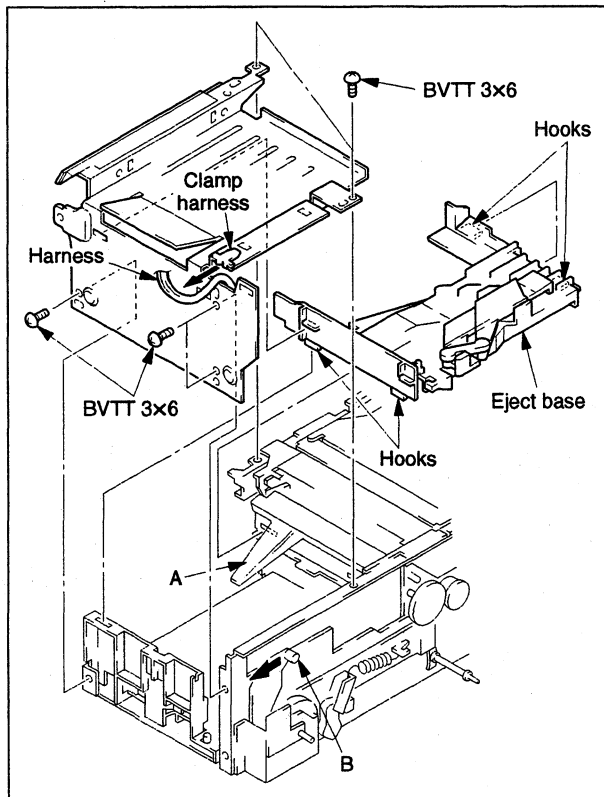


## 2-2-16. Removal of the Stepping Motor



## 2-2-17. Removal of the Load Block Assembly

1.

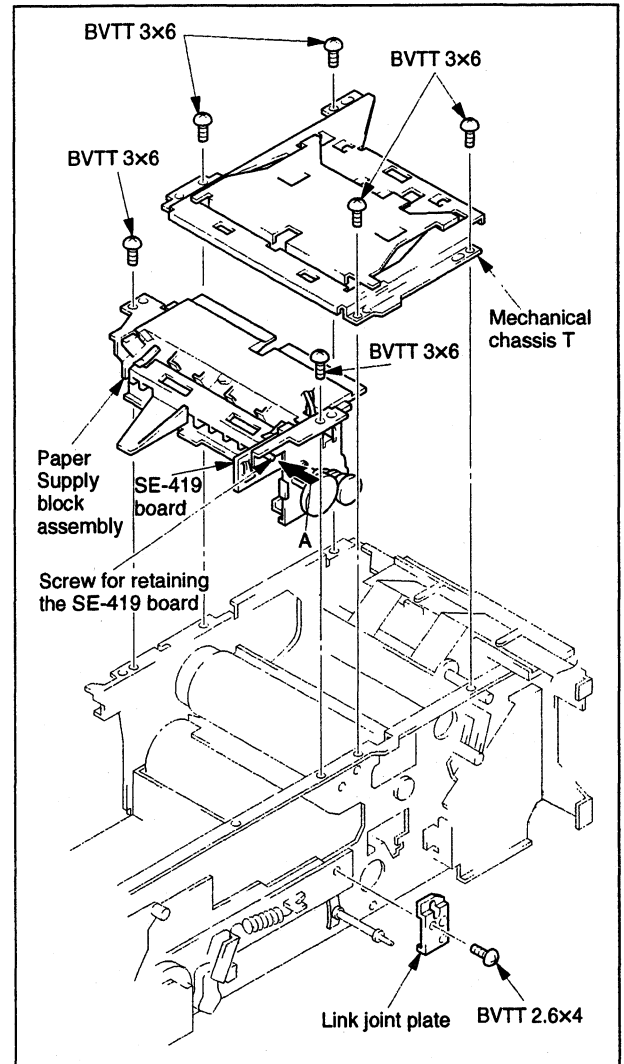


**Note :** 1. When removing or attaching the eject base, perform it while portion A is lifted.

2. When attaching the eject base, push portion B in the direction shown by the arrow.

UP-2800 (E)

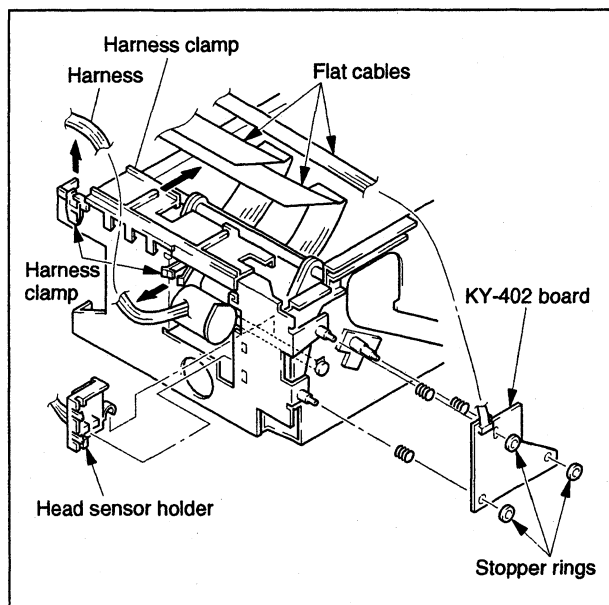
2.



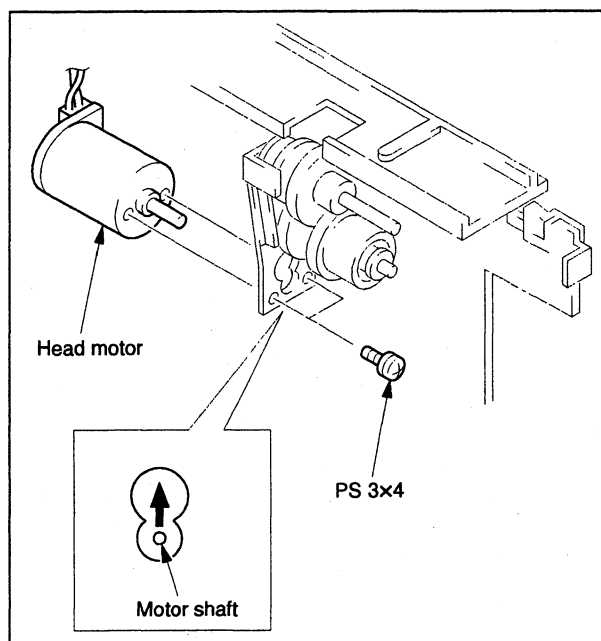
**Note :** When removing paper supply block, remove the screw for retaining the SE-419 board while pushing it in the direction shown by the arrow.

## 2-2-18. Removal of the Head Motor

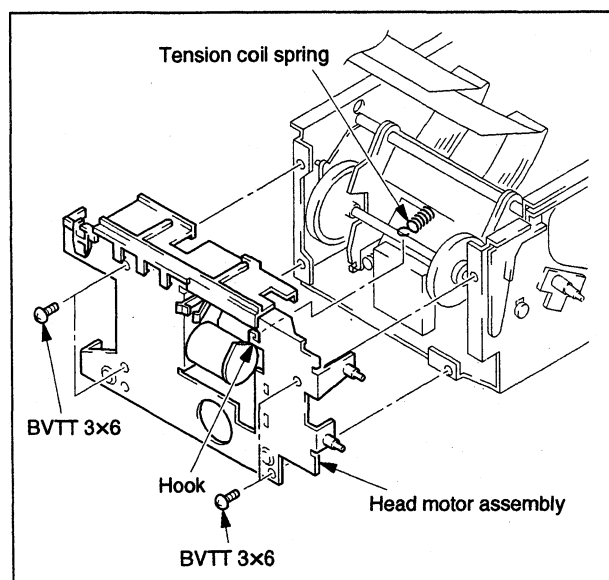
1.



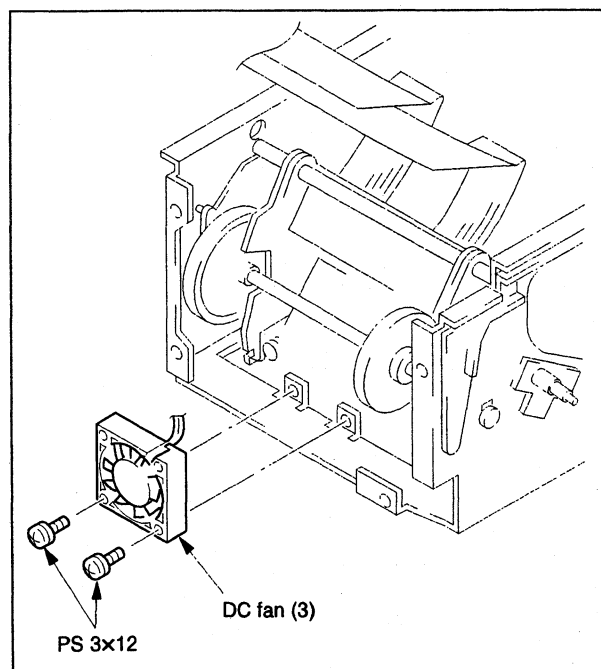
3.



2.

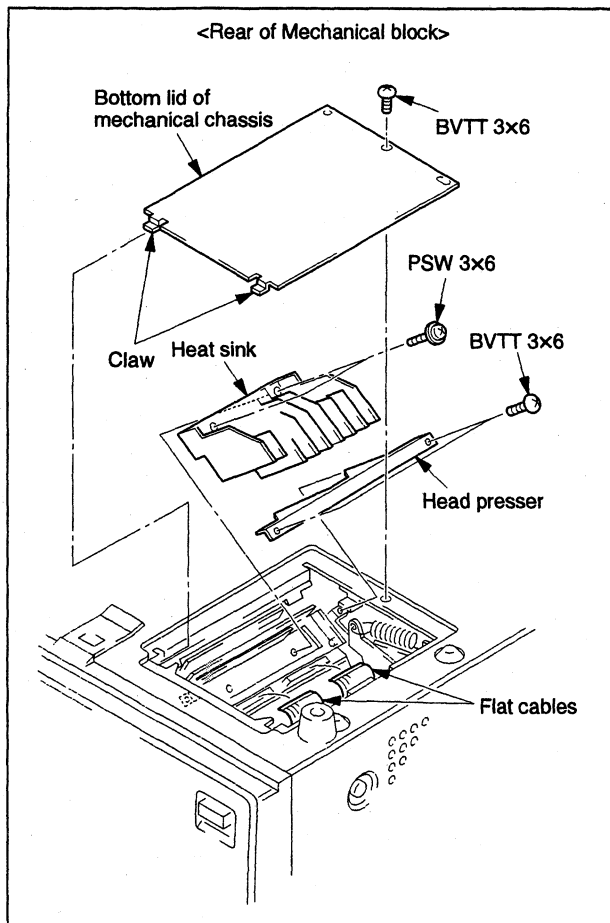


## 2-2-19. Removal of the DC Fan (3)

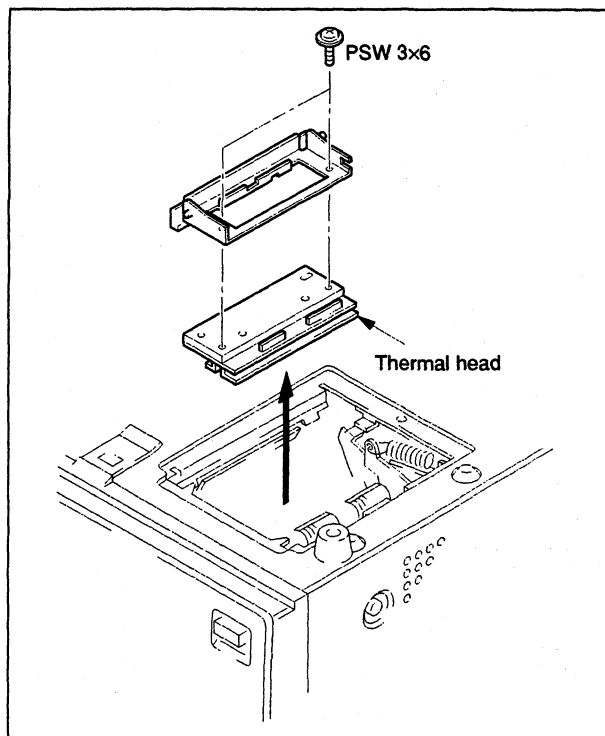


## 2-3. REPLACEMENT OF THERMAL HEAD

1.



2.



## SECTION 3

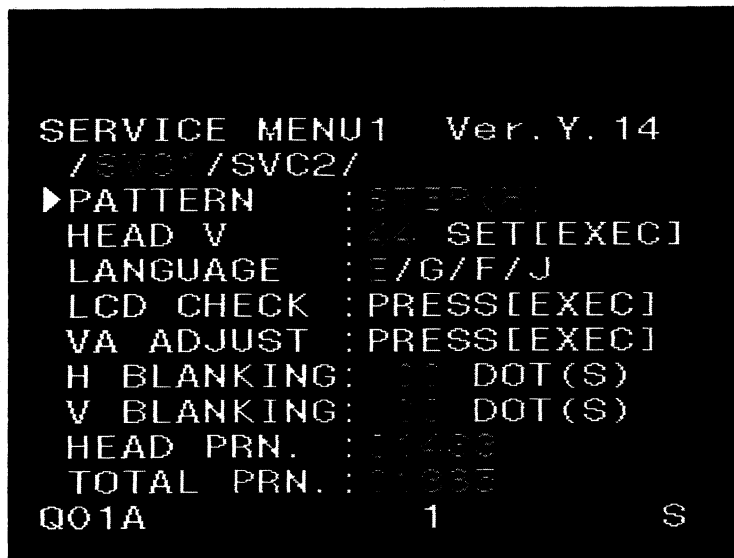
### ELECTRICAL AND MECHANICAL ALIGNMENT

#### 3-1. ELECTRICAL ADJUSTMENT

##### 3-1-1. Outputting the Test Pattern in the Service Mode

This mode is used when the VA-181 board, FMY-21 board, thermal head, and parts are replaced.

1. Set the ribbon and paper.
2. Turn on the power switch to enter the service mode while pressing the  and  keys simultaneously.
3. Move the cursor to the PATTERN: item.
4. Set the necessary pattern name using  and  keys.
5. Press the  key. The test pattern is then displayed on the monitor.



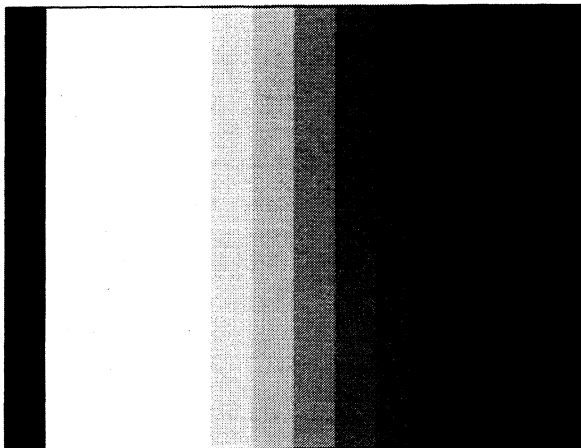
```
SERVICE MENU1 Ver. Y. 14
/SVC1/SVC2/
▶PATTERN :STEP(R)
HEAD V :24 SET[EXEC]
LANGUAGE :E/G/F/J
LCD CHECK :PRESS[EXEC]
VA ADJUST :PRESS[EXEC]
H BLANKING : 00 DOT(S)
V BLANKING : 00 DOT(S)
HEAD PRN. : 0000
TOTAL PRN. : 0000
Q01A 1 S
```

##### Notes:

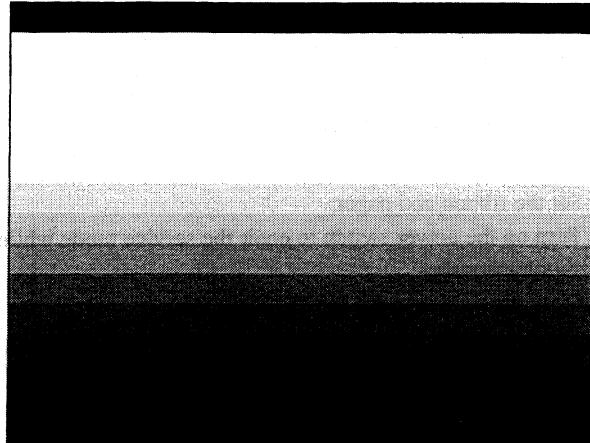
1. In the state when an error (no paper or ribbon) occurs, the system starts with the error displayed.  
At that time, press the  key, press the  and  keys to display the service menu, and perform the operation described above.
2. This test pattern cannot be output in the MULTI PIX "2" state. In the state except MULTI PIX "1", a white frame may be contained in the print result of a test pattern. In this case, set MULTI PIX to "1" during print.

There are several types of test patterns. Four standard patterns are as follows:

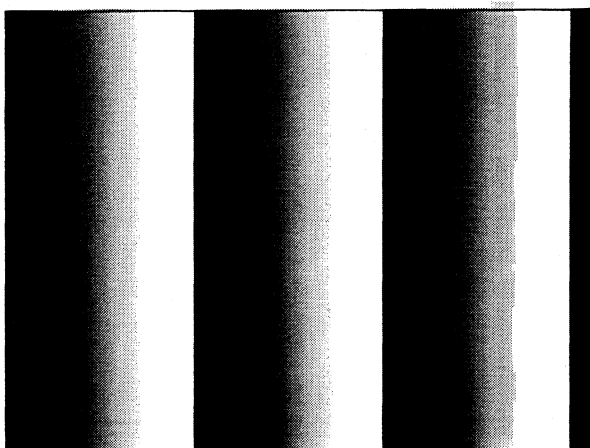
① STEP(H)



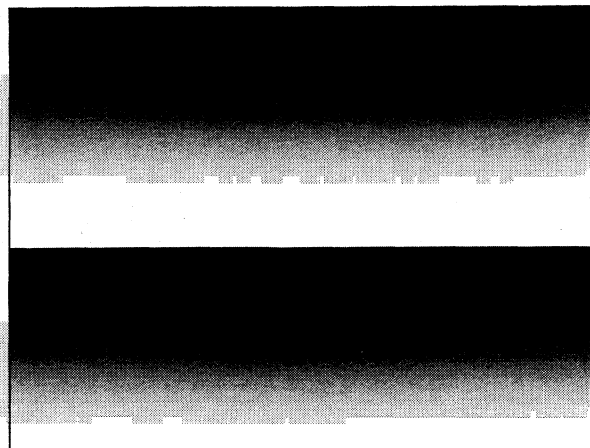
② STEP(V)



③ RAMP(H)



④ RAMP(V)



### 3-1-2. Concentration Adjustment during Thermal Head Replacement

- 1 Output test pattern STEP(H) referring to "Outputting the Test Pattern (Internal Signal)".
- 2 Press the **PRINT** key and print STEP(H) before thermal head replacement. Use the print result as the reference of concentration.
- 3 Replace the thermal head.
- 4 After replacement, print STEP(H) again and adjust the concentration.
- 5 Reset the number of head prints.

To increase the print concentration

- 4-1 Press the **↑** and **↓** keys and move the cursor to the "HEAD V:\*\* SET **EXEC**" item in the service menu.
- 4-2 Press the **←** and **→** keys and increase the numerical value (20 to 7F) displayed in hexadecimal (the head supply voltage then increases). To decrease the print concentration, decrease the numerical value (the head supply voltage then decreases).
- 4-3 Press the **EXEC** key to determine the voltage. (The head supply voltage changes by performing this operation.)
- 4-4 Press the **PRINT** key to print STEP(H). Adjust HEAD V repeatedly until the print result and the reference printed before head replacement become the same in concentration.

To reset the number of head prints

- 5-1 Press the **↑** and **↓** keys and move the cursor to the "HEAD PRN.: \*\*\*\*\*" item in the service menu.
- 5-2 Press the **CLEAR** and **EXEC** keys simultaneously.
- 5-3 "PiPiPi PiPiPi" sounds and the number of accumulated HEAD PRN sheets becomes "00000".

Note:

The memory image may be cleared in timing when the **CLEAR** and **EXEC** keys are pressed simultaneously.

### 3-1-3. Electrical adjustment(analog section)

#### (1) Equipment Required

##### a. Composite signal

FULL FIELD 75% COLOR BAR (WHITE REF 100IRE)

##### b. S-VIDEO signal

FULL FIELD 75% COLOR BAR (WHITE REF 100IRE)

ANTI PAL

##### c. RGB signal

STEP (WHITE REF 100IRE)

Note: Sub carrier frequency of color bar signal

: 3.579545MHz  $\pm$  40Hz

How to enter the service mode(Test signal output method)

While pushing  $\rightarrow$  and  $\leftarrow$  keys , turn the power switch to ON. The unit becomes service mode.

```
SERVICE MENU1 Ver.1.00a
/ SVC1 / SVC2 /
▶ PATTERN : STEP VA
 HEAD V : 3A SET [EXEC]
 LANGUAGE : E / G / F / J
 LCD CHECK : PRESS [EXEC]
 VA ADJUST : PRESS [EXEC]
 H BLANKING : 00 DOT (S)
 V BLANKING : 00 DOT (S)
 HEAD PRN. : 04353
 TOTAL PRN. : 04375
```

Move the cursor ▶ to the position of PATTERN and select the test signal by  $\rightarrow$  and  $\leftarrow$  , push the [EXEC] key and STEP VA pattern is appeared on the monitor.

When adjusting analog adjustment, turn [MENU] image OFF.

Move the cursor ▶ to the position of VA ADJUST and push the [EXEC] key, the unit becomes the VA ADJUST mode. In this mode, the signal on the monitor is not displayed. Push the [EXEC] key again, the VA ADJUST mode is released.

### 1. INT 4 Fsc Adjustment (NTSC)

| Machine condition for adjustment | Specifications                                               | Adjustments |
|----------------------------------|--------------------------------------------------------------|-------------|
| 1. SOURCE/MEMORY : MEMORY        | TP703(A-5)<br>TP302(F-6) : GND<br><br>14.31818MHz $\pm$ 80Hz | ●CV703(A-5) |

### 2. EXT 4 Fsc Adjustment (NTSC)

| Machine condition for adjustment       | Specifications                                                   | Adjustments |
|----------------------------------------|------------------------------------------------------------------|-------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : NONE | IC608(P-5) 17P<br>TP602(P-4) : GND<br><br>14.31818MHz $\pm$ 80Hz | ●CV601(P-6) |

### 3. INT 4 Fsc Adjustment (PAL)

| Machine condition for adjustment | Specifications                                                | Adjustments |
|----------------------------------|---------------------------------------------------------------|-------------|
| 1. SOURCE/MEMORY : MEMORY        | TP702(A-6)<br>TP302(F-6) : GND<br><br>17.734475MHz $\pm$ 80Hz | ●CV701(B-6) |

### 4. INT VCXO Adjustment (PAL)

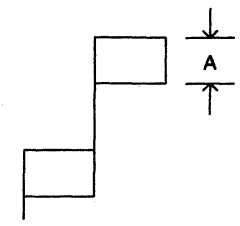
| Machine condition for adjustment | Specifications                                          | Adjustments |
|----------------------------------|---------------------------------------------------------|-------------|
| 1. SOURCE/MEMORY : MEMORY        | TP701(B-6)<br>TP302(F-6) : GND<br><br>DC 2.0 $\pm$ 0.2V | ●CV702(B-5) |

### 5. EXT 4 Fsc Adjustment (PAL)

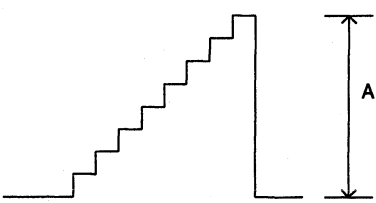
| Machine condition for adjustment       | Specifications                                                   | Adjustments |
|----------------------------------------|------------------------------------------------------------------|-------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : NONE | IC608(P-5)17P<br>TP602(P-4) : GND<br><br>17.734475MHz $\pm$ 80Hz | ●CV602(P-4) |



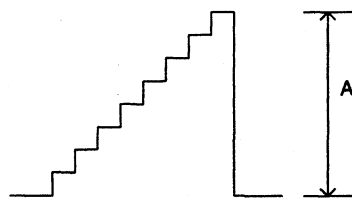
## 6. CARRIER BAL Adjustment

| Machine condition for adjustment                  | Specifications                                                                                                                    | Adjustments                                          |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| 1. PATTERN : STEP VA<br>2. SOURCE/MEMORY : MEMORY | TP907(B-2)<br>TP909(D-2) : GND<br><br>A= minimum | ●RV801(B-3)<br>●RV803(A-3)<br><br>TRIG<br>TP604(K-1) |

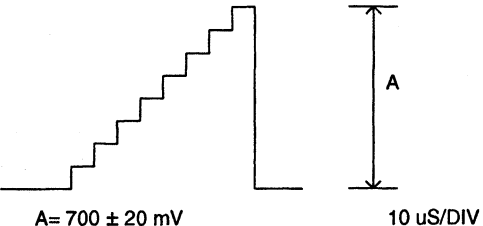
## 7. R MONI Adjustment

| Machine condition for adjustment                  | Specifications                                                                                                                                         | Adjustments                           |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. PATTERN : STEP VA<br>2. SOURCE/MEMORY : MEMORY | TP901(E-2)<br>TP909(D-2) : GND<br><br>A= 700 ± 20 mV      10 uS/DIV | ●RV902(C-4)<br><br>TRIG<br>TP604(K-1) |

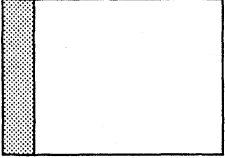
## 8. G MONI Adjustment

| Machine condition for adjustment                  | Specifications                                                                                                                                         | Adjustments                           |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. PATTERN : STEP VA<br>2. SOURCE/MEMORY : MEMORY | TP902(D-2)<br>TP909(D-2) : GND<br><br>A= 700 ± 20 mV      10 uS/DIV | ●RV901(D-3)<br><br>TRIG<br>TP604(K-1) |

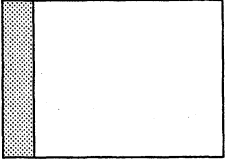
## 9. B MONI Adjustment

| Machine condition for adjustment                | Specifications                                                                                                       | Adjustments                                                           |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. PATTERN:STEP VA<br>2. SOURCE/MEMORY : MEMORY | TP903(D-2)<br>TP909(D-2) : GND<br> | ●RV903(D-4)<br><br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

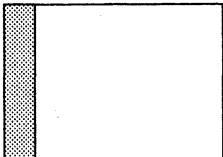
## 10. R IN Adjustment

| Machine condition for adjustment                           | Specifications                                                                                                                           | Adjustments |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : RGB<br>3. AGC : OFF | monitor<br><br>Shaded portion of red becomes maximum. | ●RV101(H-2) |

## 11. G IN Adjustment

| Machine condition for adjustment                           | Specifications                                                                                                                              | Adjustments |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : RGB<br>3. AGC : OFF | monitor<br><br>Shaded portion of yellow becomes maximum. | ●RV102(H-2) |

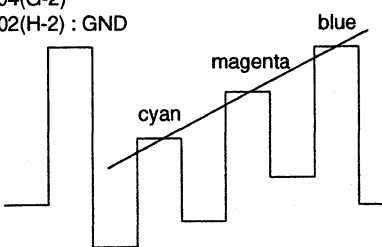
## 12. B IN Adjustment

| Machine condition for adjustment                                        | Specifications                                                                                                                                   | Adjustments |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT:RGB<br>SIGNAL : STEP<br>3. AGC:OFF | <p>monitor</p>  <p>Shaded portion of white becomes maximum.</p> | ●RV103(J-3) |

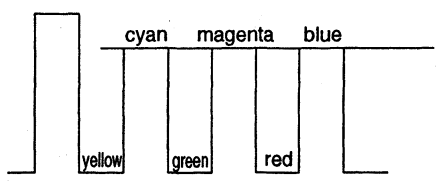
## 13. DECODER F0 Adjustment (NTSC)

| Machine condition for adjustment                                                                                                                                                 | Specifications                                                                                                                                                                                                                                                                                                                                                   | Adjustments                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>2. Set the pin 4 of IC301 to 9V by RV301(H-5).<br><br>Note : If there is not RV301, short-circuit between pins 4 and 47 of IC301. | TP409(G-4)<br>TP601(M-5) : GND<br>Adjust so that it becomes demodulated waveform.<br>Demodulated waveform .... There is not sub carrier of 3.58MHZ and demodulated output is not fluctuated the level.<br><br>After this adjustment, set the pin 4 of IC301 to 4.5V by RV301. If there is not RV301, remove short-circuited wire between pins 4 and 47 of IC301. | ●CV302(K-6)<br><br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

## 14. HUE Adjustment (NTSC)

| Machine condition for adjustment                                                         | Specifications                                                                                                                                                                                         | Adjustments                                                           |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>2. SOURCE/MEMORY : SOURCE<br>3. AGC : OFF | TP404(G-2)<br>TP402(H-2) : GND<br> <p>Adjust RV307 so that cyan, magenta and blue are on the one straight line.</p> | ●RV307(L-4)<br><br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

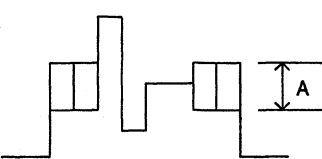
## 15. COLOR Adjustment (NTSC)

| Machine condition for adjustment                                                         | Specifications                                                                                                                                                                                                                                               | Adjustments                                                           |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>2. SOURCE/MEMORY : SOURCE<br>3. AGC : OFF | TP404(G-2)<br>TP402(H-2) : GND<br> <p>Adjust RV306 so that cyan, magenta, blue and yellow, green, red become respectively horizontal and are on the straight one line.</p> | ●RV306(L-5)<br><br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

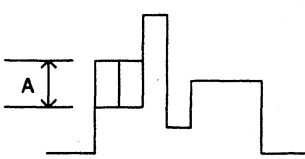
## 16. DECODER F0 Adjustment (PAL)

| Machine condition for adjustment                                                              | Specifications                                                                                                                                                                                                                                                                | Adjustments                                                           |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>2. Set the pin 4 of IC301 to 9V by RV301(H-5). | TP409(G-4)<br>TP601(H-5) : GND<br>Adjust so that it becomes demodulated waveform.<br>Demodulated waveform .... There is not sub carrier of 4.43MHZ and demodulated output is not fluctuated the level.<br><br>After this adjustment, set the pin 4 of IC301 to 4.5V by RV301. | ●CV301(H-6)<br><br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

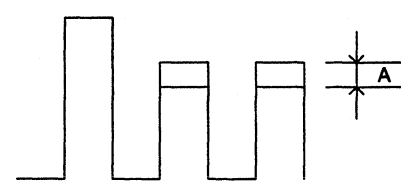
## 17. DLA Adjustment (PAL)

| Machine condition for adjustment                                        | Specifications                                                                                                                           | Adjustments                                                           |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : ANTI PAL<br>2. SOURCE/MEMORY : SOURCE | TP404(G-2)<br>TP402(H-2) : GND<br> <p>A= minimum</p> | ●RV302(H-6)<br><br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

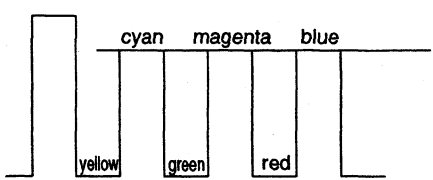
## 18. PHASE Adjustment (PAL)

| Machine condition for adjustment                                        | Specifications                                                                                                                    | Adjustments                                                       |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : ANTI PAL<br>2. SOURCE/MEMORY : SOURCE | TP404(G-2)<br>TP402(H-2) : GND<br><br>A= minimum | ⌚RV301(H-5)<br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

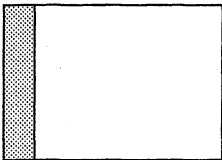
## 19. DAT Adjustment (PAL)

| Machine condition for adjustment                                         | Specifications                                                                                                                | Adjustments                                                       |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>2. SOURCE/MEMORY : SOURCE | TP404(G-2)<br>TP402(H-1)<br><br>A= minimum | ⌚LV301(H-6)<br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

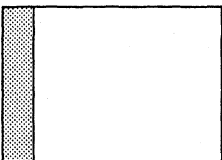
## 20. COLOR Adjustment (PAL)

| Machine condition for adjustment                                                   | Specifications                                                                                                                                                                                                                                            | Adjustments                                                       |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1. INPUT SELECT<br>SIGNAL : COLOR BAR<br>2. SOURCE/MEMORY : SOURCE<br>3. AGC : OFF | TP404(G-2)<br>TP402(H-2) : GND<br><br>Adjust RV306 so that cyan, magenta, blue and yellow, green, red become respectively horizontal and are on the straight one line. | ⌚RV306(L-5)<br><br><br><br><br><br><br><br><br>TRIG<br>TP604(K-1) |

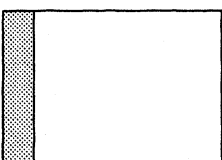
## 21. PIC Adjustment

| Machine condition for adjustment                                                                              | Specifications                                                                                                                                   | Adjustments |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>3. SOURCE/MEMORY : SOURCE<br>4. AGC : OFF | <p>monitor</p>  <p>Shaded portion of green becomes maximum.</p> | RV303(J-4)  |

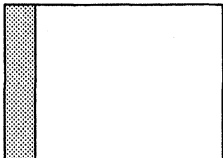
## 22. DEC R Adjustment

| Machine condition for adjustment                                                                              | Specifications                                                                                                                                      | Adjustments |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>3. SOURCE/MEMORY : SOURCE<br>4. AGC : OFF | <p>monitor</p>  <p>Shaded portion of yellow becomes maximum.</p> | RV304(J-4)  |

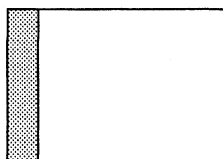
## 23. DEC B Adjustment

| Machine condition for adjustment                                                                              | Specifications                                                                                                                                     | Adjustments |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>3. SOURCE/MEMORY : SOURCE<br>4. AGC : OFF | <p>monitor</p>  <p>Shaded portion of white becomes maximum.</p> | RV305(J-4)  |

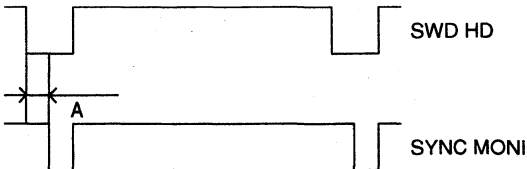
## 24. AGC REF Adjustment

| Machine condition for adjustment                                                                             | Specifications                                                                                                                                                                                                                  | Adjustments |
|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>3. SOURCE/MEMORY : SOURCE<br>4. AGC : ON | <div style="text-align: center;">             monitor<br/>  </div> <p style="text-align: center;">Shaded portion of white becomes maximum.</p> | ⚙RV401(M-3) |

## 25. VBS Y Adjustment

| Machine condition for adjustment                                                                              | Specifications                                                                                                                                                                                                                   | Adjustments |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. VA ADJUST MODE<br>2. INPUT SELECT : VBS<br>SIGNAL : COLOR BAR<br>3. SOURCE/MEMORY : SOURCE<br>4. AGC : OFF | <div style="text-align: center;">             monitor<br/>  </div> <p style="text-align: center;">Shaded portion of white becomes maximum.</p> | ⚙RV201(P-4) |

## 26. H PHASE Adjustment

| Machine condition for adjustment                                                                                                                                 | Specifications                                                                                                                                                                                                                                                                                                                                                                                   | Adjustments                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 1. INPUT SELECT : Y/C<br>SIGNAL : COLOR BAR<br>2. SOURCE/MEMORY : SOURCE<br>3. AGC : OFF<br><br>Note : NTSC and PAL compatible model is satisfied the NTSC spec. | <div>             TP604(K-4) : SWD HD<br/>             TP904(C-2) : SYNC MONI           </div> <div style="text-align: center;">  </div> <div style="text-align: center;">             A; <math>0 \pm 100</math> ns (NTSC)<br/>             A; <math>250 \text{ ns} \pm 100</math> ns (PAL)           </div> | ⚙RV601(L-6)<br><br><br>TRG<br>TP604(K-1) |

## 3-2. MECHANICAL ADJUSTMENT

### 3-2-1. Mechanical Adjustment Mode

- This mode is used to adjust the electric boards (PRT-11, SE-417 to SE-430, and SU-36 to SU-39 boards) mounted on the mechanical deck and confirm the assembling of mechanical parts.
- Perform the mechanical adjustment when the electric boards mounted on the mechanical deck or the mechanical deck parts were replaced. (Especially, various information items on the mechanical deck are stored in IC1 on the SE-417 board. Be sure to perform the whole mechanical adjustment after IC1 on the SE-417 board is replaced.)

### 3-2-2. Entering the Mechanical Adjustment Mode

- (1) Turn on the power while pressing the **DISPLAY OFF** and **EXEC** keys simultaneously.
- (2) The "MECHA\_SETUP" menu in the mechanical adjustment mode is displayed on the screen (or LCD).

#### MECHA SET UP MENU

```
MECHA SETUP PRESS[EXEC]
>SENSORS CHECK
 THERM&EEPROM CHECK
 HEAD HOME CHECK
 TRAY-ARM HOME CHECK
 PLATEN HOME CHECK
 FG SENSOR CHECK
 BARCODE ADJUSTMENT
 RBN_CD_ADJUSTMENT
 PRINT ADJUSTMENT
 SENSORS DATA 00
```

#### OK

```
MECHA SETUP PRESS[EXEC]
SENSORS CHECK
 THERM&EEPROM CHECK
>HEAD HOME CHECK
 TRAY-ARM HOME CHECK
 PLATEN HOME CHECK
 FG SENSOR CHECK
 BARCODE ADJUSTMENT
 RBN_CD_ADJUSTMENT
 PRINT ADJUSTMENT
 SENSORS DATA 00
OK
```

#### NG

```
MECHA SETUP PRESS[EXEC]
>SENSORS CHECK
 THERM&EEPROM CHECK
 HEAD HOME CHECK
 TRAY-ARM HOME CHECK
 PLATEN HOME CHECK
 FG SENSOR CHECK
 BARCODE ADJUSTMENT
 RBN_CD_ADJUSTMENT
 PRINT ADJUSTMENT
 SENSORS DATA 00
E2 0E
```

#### SENSOR DATA

```
MECHA SETUP PRESS[EXEC]
SENSORS CHECK
 THERM&EEPROM CHECK
 HEAD HOME CHECK
 TRAY-ARM HOME CHECK
 PLATEN HOME CHECK
 FG SENSOR CHECK
 BARCODE ADJUSTMENT
 RBN_CD_ADJUSTMENT
 PRINT ADJUSTMENT
>SENSORS DATA 00
FE F4 1C 80
```

- (3) Move the cursor to the item to be adjusted or confirmed using **↑** and **↓** keys and press the **EXEC** key.
- (4) The adjustment and confirmation are automatically performed by the mechanical deck. After adjustment and confirmation are completed, the result is displayed on the screen (or LCD).
- (5) If abnormality is confirmed, take proper actions referring to the NG\_CODE list (on page 6-6 to 6-8).
- (6) Turn on the power again when exiting the mechanical adjustment mode.



### 3-2-3. Normal Operation Confirmation and Automatic Adjustment

#### 1. SENSORS\_CHECK

- [Contents]
- Check that the communication between boards is possible.
  - Check that the sensor in the item to be checked operates normally.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure]
- 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  - 2) Move the cursor to the item and press the **EXEC** key.
- [Display]
- OK : OK
  - NG : If no answer\*no answer is displayed, the subsequent adjustment and confirmation cannot be performed because the communication with the SY-250 board is impossible.
    - : NG command (E2) and NG data (\*\*)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG\_CODE2.)

#### 2. THERM&EEPROM\_CHECK

- [Contents]
- Check that IC1 on the SE-417 board operates normally.
  - Check that the thermal head thermistor and the thermistor (TH1) on the PRT-11 board operate normally.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure]
- 1) Move the cursor to the item and press the **EXEC** key.
- [Display]
- OK : OK
  - NG : NG command (E4) and NG data (\*\*)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG\_CODE3.)

#### 3. HEAD\_HOME\_CHECK

- [Contents]
- Check that the head position sensor operates normally.
  - Check that the head motor operates.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure]
- 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  - 2) Move the cursor to the item and press the **EXEC** key.
- [Display]
- OK : OK
  - NG : NG command (E1) and NG data (\*\*)(One-byte data is displayed by a HEX code. The value of the HEX code is an NG item. Refer to NG\_CODE1.)

#### 4. TRAY\_ARM\_HOME\_CHECK

- [Contents]
- Check that the tray position sensor operates normally.
  - Check that the tray motor operates.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure]
- 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  - 2) Move the cursor to the item and press the **EXEC** key.
- [Display]
- OK : OK
  - NG : NG command (E1) and NG data (\*\*)(One-byte data is displayed by a HEX code. The value of the HEX code is an NG item. Refer to NG\_CODE1.)

#### 5. PLATEN\_HOME\_CHECK

- [Contents]
- Check that the platen position sensor operates normally.
  - Check that the platen motor operates.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure]
- 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  - 2) Move the cursor to the item and press the **EXEC** key.
- [Display]
- OK : OK
  - NG : NG command (E1) and NG data (\*\*)(One-byte data is displayed by a HEX code. The value of the HEX code is an NG item. Refer to NG\_CODE1.)

#### 6. FG\_SENSOR\_CHECK

- [Contents]
- Check that the paper supply FG sensor and ribbon FG sensor operate normally.
  - Check that the paper supply motor and ribbon motor operate.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure]
- 1) Open the platen cover and pull out the ribbon cartridge and paper tray.
  - 2) Move the cursor to the item and press the **EXEC** key.
- [Display]
- OK : OK
  - NG : NG command (E5) and NG data (\*\*)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG\_CODE4.)

## 7. BARCODE\_ADJUSTMENT

- [Contents] • The light-emitting level and threshold level of a barcode sensor are adjusted automatically.
- Check that the paper supply motor operates.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure] 1) Close the platen cover and insert the ribbon cartridge.  
2) Move the cursor to the item and press the **EXEC** key.
- [Display] • OK : OK
- NG : NG command (E5) and NG data (\*\*)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG\_CODE4.)

## 8. RBN\_CD\_ADJUSTMENT

- [Contents] • The light-emitting level and threshold level of RBN\_CD0 and RBN\_CD1 sensors are adjusted automatically.
- Check that the ribbon motor operates.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure] 1) Close the platen cover and insert the ribbon cartridge.  
2) Move the cursor to the item and press the **EXEC** key.
- [Display] • OK : OK
- NG : NG command (E5) and NG data (\*\*)(One-byte data is displayed by a HEX code. The HEX code is converted into a binary code. The bit in which "1" is set is considered as a defective position. Refer to NG\_CODE4.)

## 9. PRINT\_ADJUSTMENT

- [Contents] • The light-emitting level and threshold level of a PP\_JAM sensor are adjusted automatically.
- Check that no irregular print is caused by the thermal head or gear.
  - Check that no abnormality exists in the path system of paper.
  - Check that the harnesses and mechanical parts are assembled properly.
- [Procedure] 1) Close the platen cover and insert the ribbon cartridge and paper tray.  
2) Move the cursor to the item and press the **EXEC** key.
- [Display] • OK : OK
- NG : NG command and NG data (h' \*\*)(One-byte data is displayed by a HEX code.  
The value of the HEX code is an NG item. Refer to NG\_CODE4.)

## 10. SENSORS\_DATA

- [Contents]
- Display the adjustment values (light-emitting level value, high-level value, low-level value, and threshold value) of four sensors that were adjusted automatically. (RBN\_CD0, RBN\_CD1, BARCODE, and PP\_JAM sensors)
  - Trouble history information of mechanical deck (Read the error information occurring during mechanical operation. Up to the last eight error information can be stored. The contents of data correspond to the NG\_CODE1 data.

[Procedure] 1) Move the cursor to the item using  $\leftarrow$  and  $\rightarrow$  keys to select the desired item and press the **EXEC** key.

For display number "00": RBN\_CD0 sensor

For display number "01": RBN\_CD1 sensor

For display number "02": BARCODE sensor

For display number "03": PP\_JAM sensor

For display number "04": Trouble history information

[Display] (Example) 84 f5 0f 80

(One-byte data is displayed using a HEX code. In each sensor, data is arranged in the order of "light-emitting level value", "high-level value", "low-level value", and "threshold value" from the top. For the data described above, the LED voltage value is 84, and the high value of PHTR is f5. The low value of PHTR is 0f, and the threshold value is 80.)

[How to convert the data displayed using a HEX code into a sensor voltage value]

- The displayed data indicates the value obtained when the voltage levels (0 to 5V, and 0 V) of each sensor are equally divided into 1/256. Therefore, the voltage value that the HEX code indicates can be obtained from the calculation below.

(Example) When the HEX code is h 'b3 h 'b3 = d' 179 (← Converts the hexadecimal display into a decimal display.)

$5.0(\text{V}) \times 179 / 256 = 3.4(\text{V})$  (← Voltage value of sensor indicated by h 'b3)

## SECTION 4

### CIRCUIT DESCRIPTION

#### 4-1. DIGITAL VIDEO SIGNAL PROCESSING BLOCK

##### 4-1-1. Outline

The major functions of the FMY-21 board are as follows:

- ① Converts a video input signal from analog to digital and stores it in memory (DRAM). (Capture)
- ② Color-adjusts the video data stored in memory using a color adjustment circuit, then converts it from digital to analog, and outputs it to the analog block as a monitor output signal. (Monitor output)
- ③ Color-adjusts the video data stored in memory using a color adjustment circuit, then outputs it to the head control block through a masking block as print data. (Print data output)
- ④ Converts a video input signal from analog to digital, then from digital to analog and outputs it to the analog block as a monitor output signal. (Source output)

The FMY-21 board consist of the following blocks.

CPU block

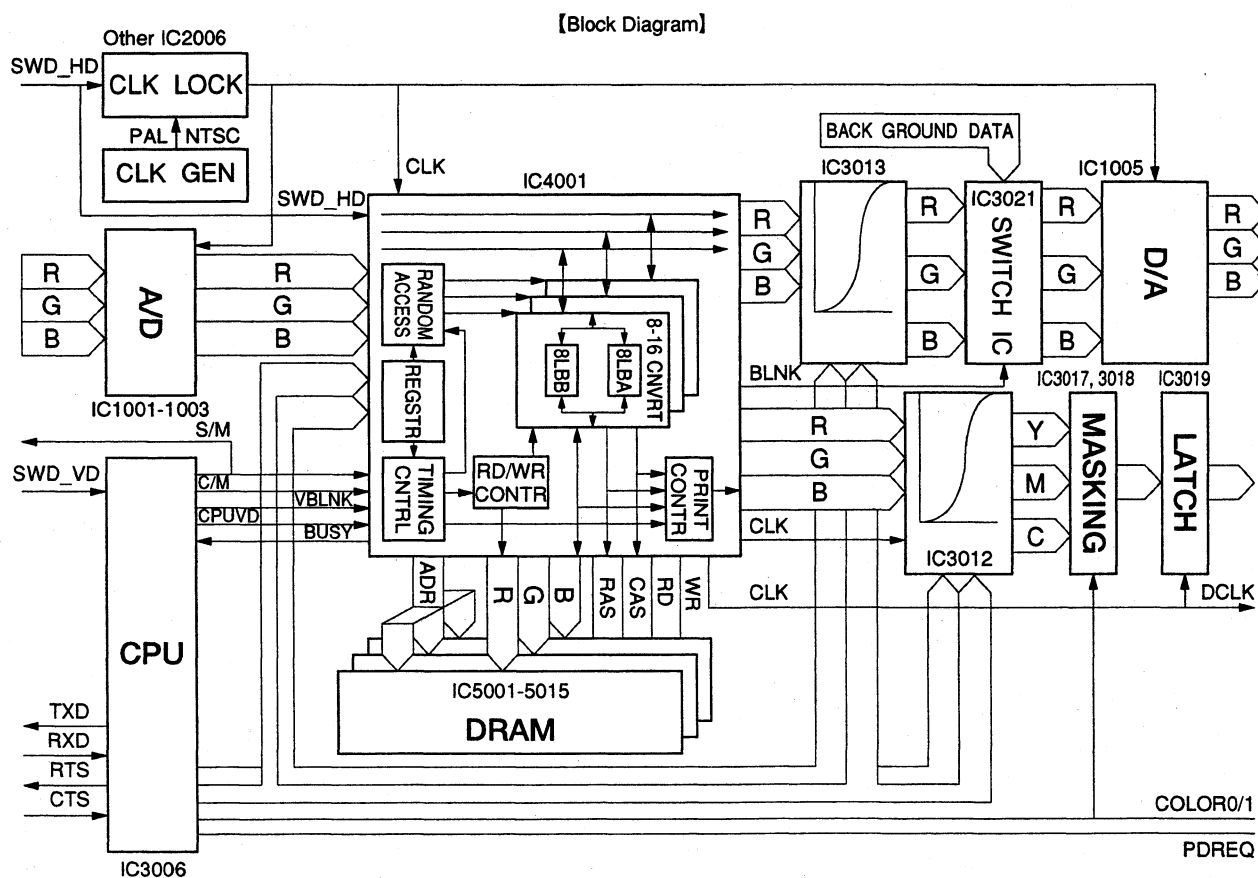
Memory (DRAM) block

Memory control (ASIC) block

Sampling clock generator

Color adjustment block

Masking block



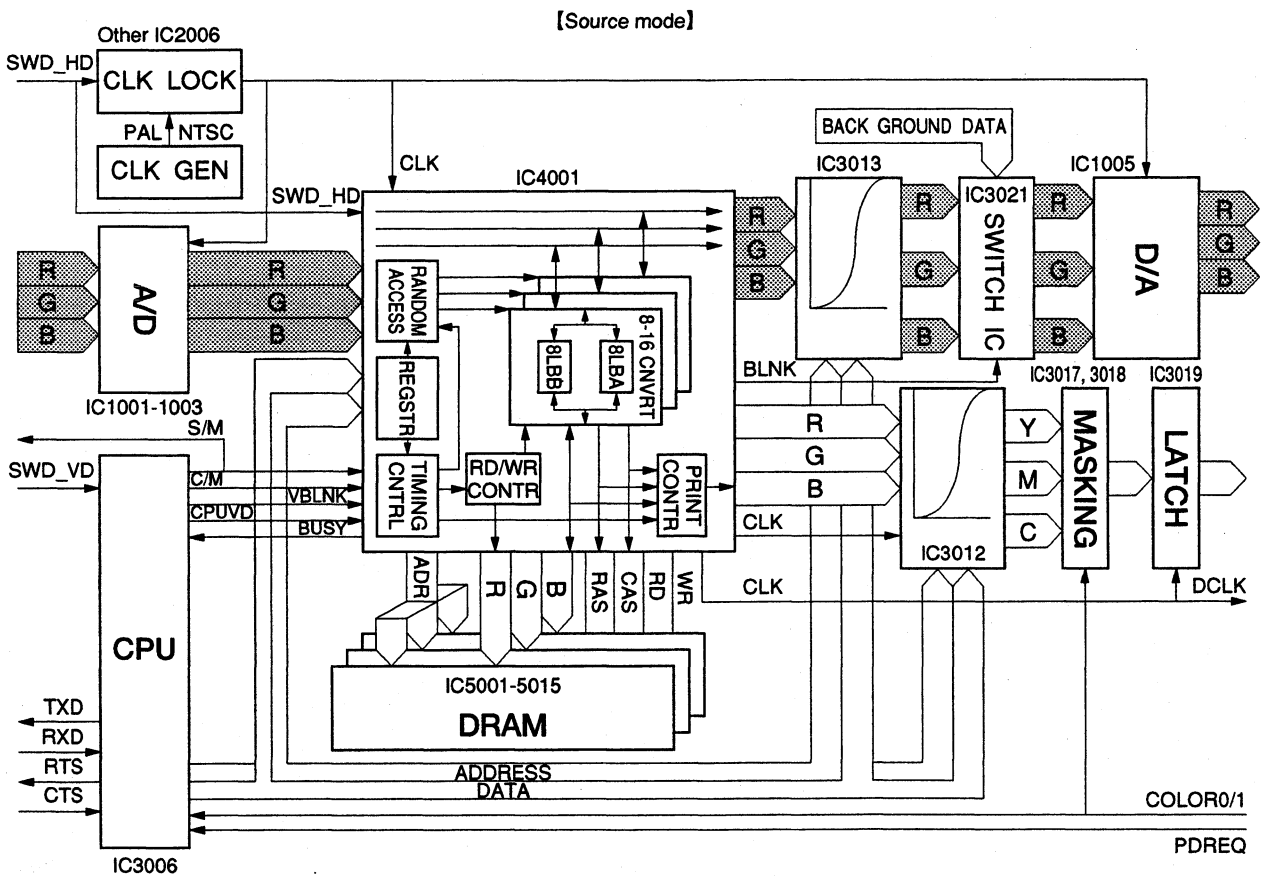
#### 4-1-2. Flow of Video Signal in Each Operation Mode

The operation mode on the flow of a video signal on the FMY-21 board can be classified into the following four modes.

- (1) Source mode
- (2) Memory mode
- (3) Capture mode
- (4) Print data transfer mode

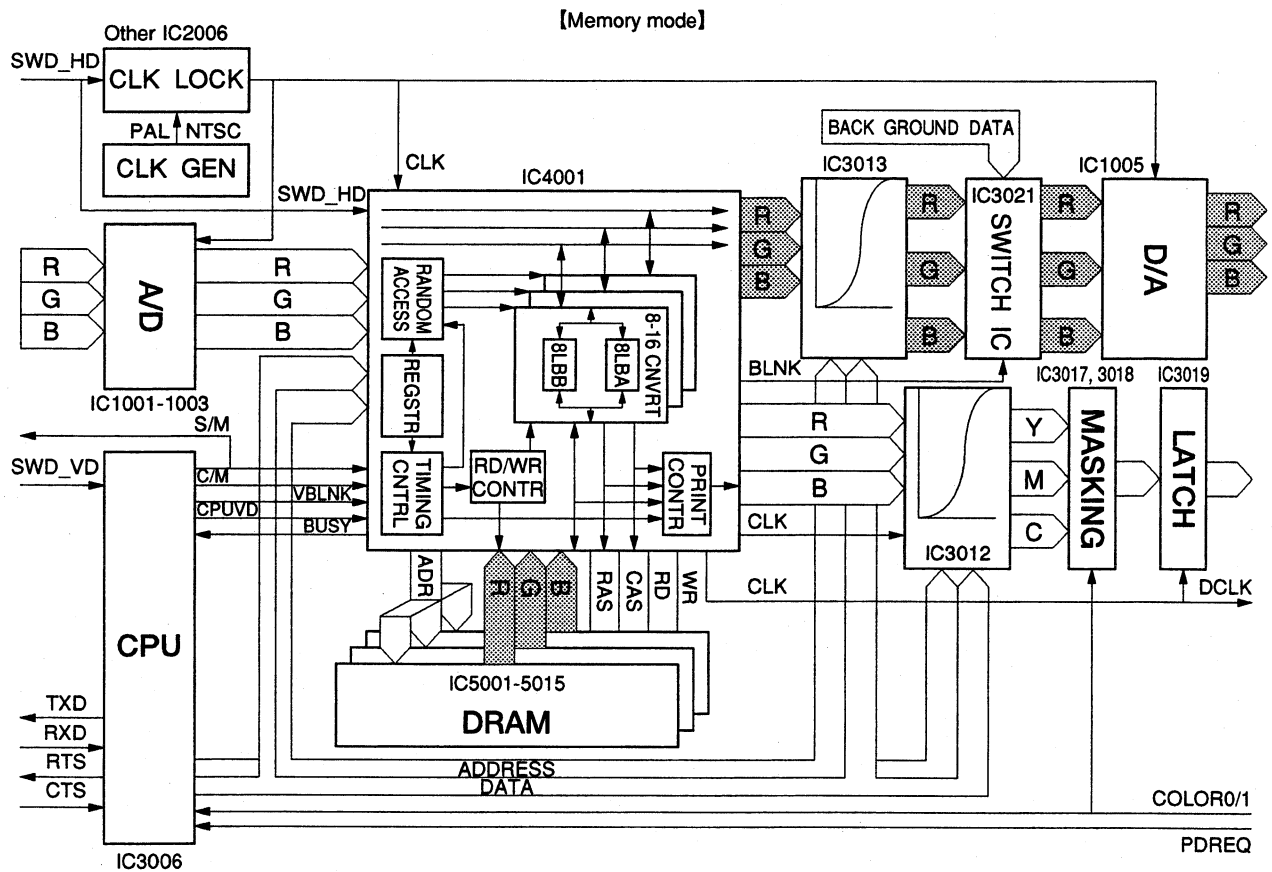
##### ① Source mode

In the source mode, a video input signal is directly output through the FMY-21 board to the monitor. The flow of a video signal is described below. The analog RGB signal input from the VA-181 board is converted from analog to digital to produce each eight-bit digital signal. The signal is passed through a DRAM control circuit (IC4001) and color-adjusted using a color adjustment circuit (IC3013). After that, the image size is adjusted by the blanking circuit consisting of CPU and a DRAM control circuit. The signal is then converted from digital to analog to produce an analog signal again and output to the VA-181 board.



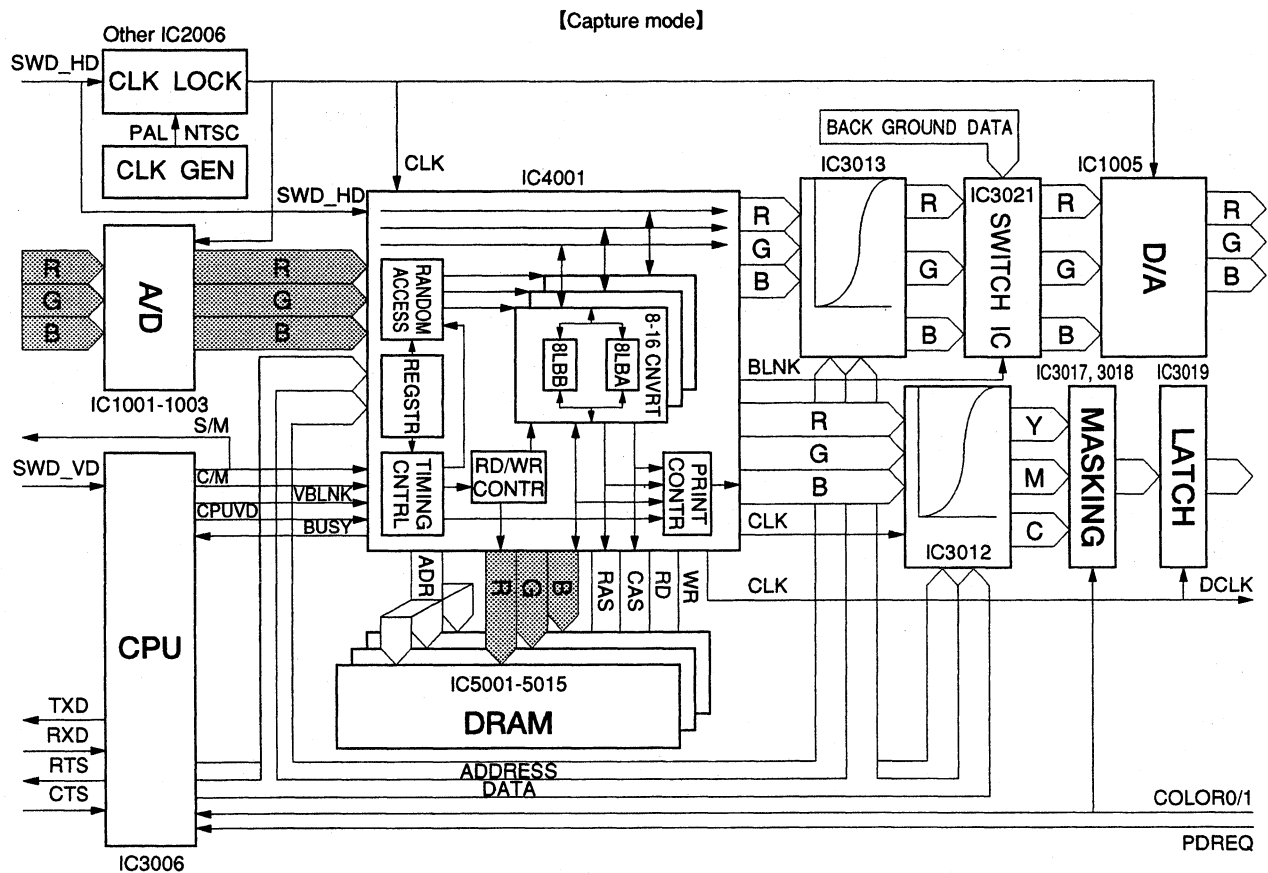
## ② Memory mode

In the memory mode, the video data fetched on DRAM is output to the monitor. The flow of a video signal is described below. The digital video data fetched on DRAM is read using DRAM control circuit CXD8665Q (IC4001) and converted from 16 bits to 8 bits. After that, the data is color-adjusted using a color adjustment circuit (IC3013), and the image size is adjusted by the blanking circuit consisting of a DRAM control circuit. The data is then converted from digital to analog and output to the VA-181 board.



### ③ Capture mode

In the capture mode, a video input signal is converted from analog to digital and fetched into DRAM. The flow of a video signal is described below. The video signal input from the VA-181 board is converted from analog to digital to produce an eight-bit digital signal. In DRAM control circuit CXD8665Q (IC4001), the signal is then converted from eight bits to 16 bits, divided into 1/4 or 1/16 (decimation), and expanded in DRAM.

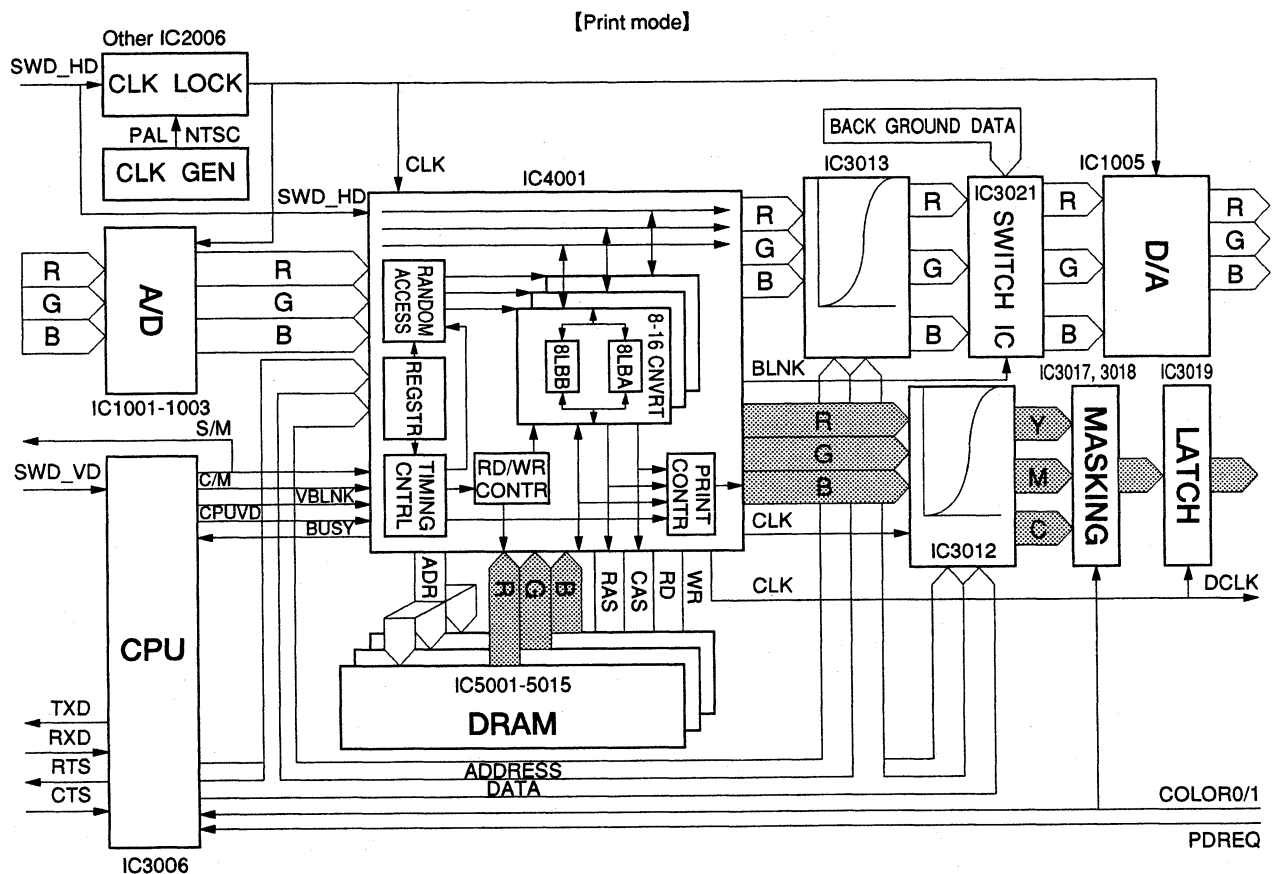




#### ④ Print data transfer mode

In the print data transfer mode, the video data in DRAM is output to the PRT-11 board as print data during print. The flow of a video signal is described below.

The data request signal from the PRT-11 board is input to CPU (IC3006). CPU controls DRAM control circuit CXD8665Q (IC4001), and the DRAM control circuit converts the video data in DRAM into print data and outputs it. After that, the data is color-adjusted, color-rotated, and RGB/YMC-converted by a color adjustment circuit (IC3012). The data is then mask-converted using two masking ROMs and output to the PRT-11 board as print data.



### 4-1-3. Basic Operation Timing and CPU

The operation of the FMY-21 board is controlled and managed according to the command from the SY-250 board by CPU. CPU operates with the VD signal (nSWD\_VD) selected to EXT/INT as reference and sets and controls a DRAM control circuit.

The major functions of CPU that mainly controls the FMY-21 board operation are as follows:

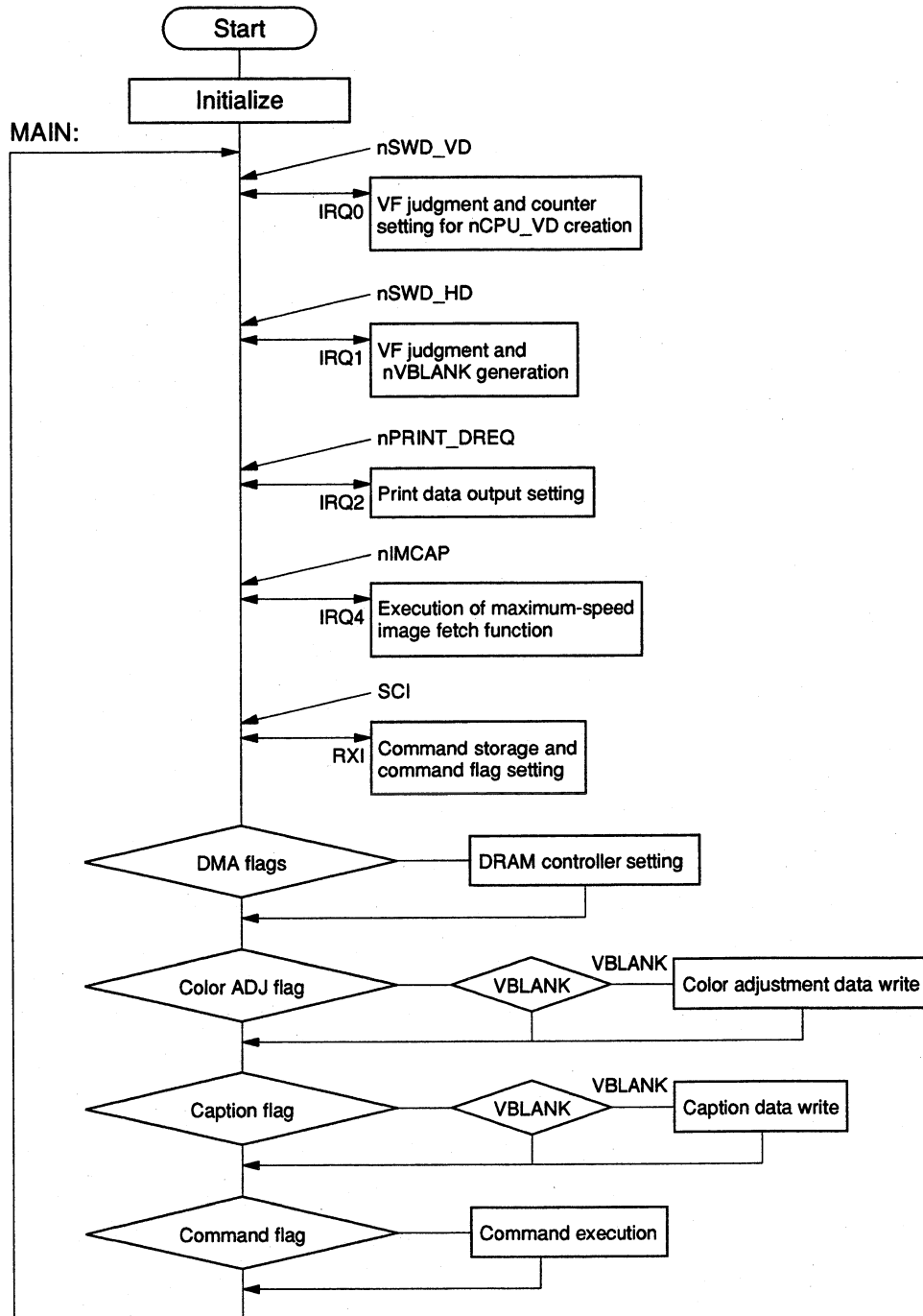
- (1) Receives the command from the SY-250 board and executes it.
- (2) VF judgment of video input signal (Synchronous management)
- (3) Outputs a VBLNKING signal.
- (4) Controls a DRAM control circuit.
- (5) Writes a color adjustment data.
- (6) Writes caption data.
- (7) STROBE-compatible

#### ① CPU memory map

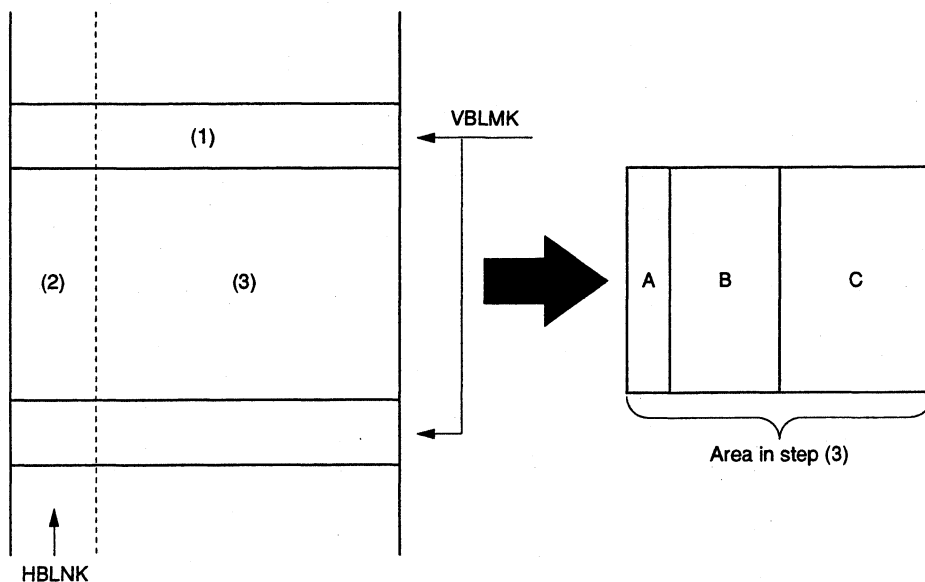
The memory map of CPU is shown below.

|       |                                    |
|-------|------------------------------------|
| 00000 | Program ROM                        |
| 20000 |                                    |
| C0000 | Color adjustment circuit (Monitor) |
| C1000 | Color adjustment circuit (Print)   |
| C2000 | DRAM control register              |
| C3000 |                                    |
| FF710 | Internal SRAM of CPU               |
| FFF10 |                                    |
| FFF1C | Internal register of CPU           |
| FFFFF |                                    |

## ② Flowchart of CPU



### ③ Time-division timing



#### (1) VBLNK period

VF judgment, color adjustment data write, and caption data write (Controlled by CPU.)

#### (2) HBLNK period

Print data output (2)(Controlled by a DRAM control circuit.)

#### (3) Effective screen period

A) DRAM refresh (Controlled by a DRAM control circuit)

B) Capture or monitor output DRAM access (Controlled by a DRAM control circuit.)

C) Print data output (1)(Controlled by a DRAM control circuit.)

### ④ Command communication with SY board

This communication is carried out by bidirectional asynchronous serial communication that uses a serial communication port of CPU.

Asynchronous serial communication

Start bit : 1

Data bit : 8

Stop bit : 1

Parity bit : None

Baud rate : 19,200 bps

⑤ Synchronous management

The external sync signals (nEXT\_VD and nEXT\_HD) and internal sync signals (nINT\_VD and nINT\_HD) of a video input signal are input from the analog block. The internal and external sync signals are selected by the SRC/nMEMO signal from the CPU on the FMY-21 board and sent to the CPU and DRAM control circuit as a V sync signal (nSWD\_VD) and H sync signal (nSWD\_HD). The nEXT\_HD signal is AFC-processed and input in the analog block. However, the FMY-21 board operation is not secured when the nEXT\_HD signal is interrupted during input operation. The CPU to which nSWD\_HD and nSWD\_VD signals are input performs phase comparison and VF judgment (frame judgment). In this VF judgment, processing is done so that the context does not collapse even if jitters slightly exist in the sync signal. Therefore, the odd and even fields are not captured by mistake. The nSWD\_VD signal is also AFC-processed by the software in CPU. Consequently, even if noise is mixed in the nSWD\_VD signal, the noise component is canceled. A virtual VD signal (CPU\_VD) is generated by CPU even if the nSWD\_VD signal is interrupted or the period is changed. The CPU\_VD signal is input to the DRAM control circuit.

⑥ VBLANKING signal output

An H blanking signal is generated in hardware by the data set in a DRAM control circuit. A V blanking signal is generated by CPU (CPUVBLNK), input to the DRAM control circuit, and output from the DRAM control circuit as a blanking signal for input video data capture and memory video data monitor output purposes. The CPUBVLNK signal that determines the position of the effective screen in the vertical (V) direction is generated by counting the falling edges of an nSWD\_HD signal after an nSWD\_VD signal is input to CPU.

⑦ Control of DRAM control circuit

Capture operation

Monitor output operation

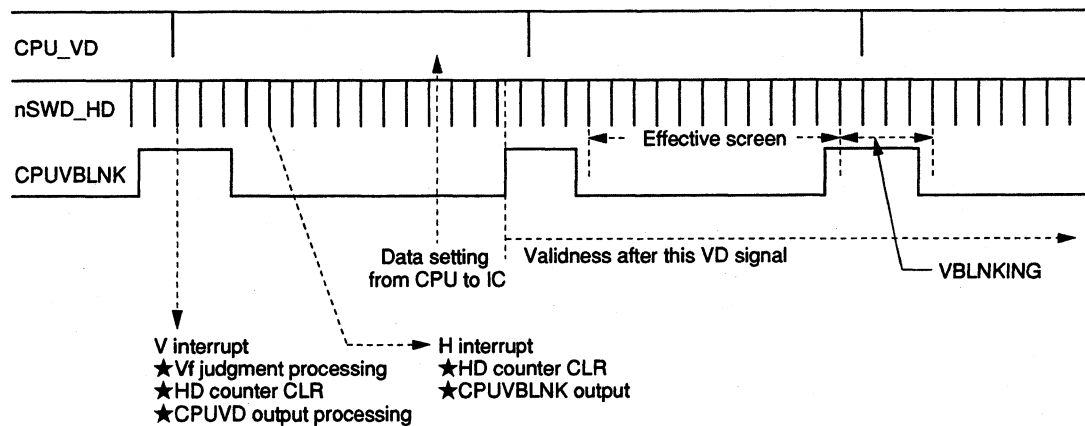
Print data output

DRAM refresh operation

Random access operation

To execute the operation described above, each mode is set to the register of a DRAM control circuit.

The DRAM control circuit operates by triggering VD and HD signals. Each setting is not restricted in video timing. The setting value is latched by a VD signal and validated from the V interrupt.



- ⑧ Color adjustment data write  
Data for a conversion table is written in a color adjustment circuit (CXD8869Q ) during V blanking.
- ⑨ Caption data write  
Caption data is set in a DRAM control circuit during V blanking. The DRAM control circuit expands the data in DRAM.
- ⑩ IVP (identification photograph) STROBE-compatible  
A strobe emission trigger signal is output from a printer. A trigger signal for strobe emission is output from CPU during V period just before capture when the capture operation is performed by the input signals from the REMOTE 1 and 2 terminals and main unit's key.

#### 4-1-4. Memory (DRAM) block

The memory block of a one-frame unit is constituted by the following.

4 M-bit DRAM x 3 (NTSC 1 frame)

4 M-bit DRAM x 6 (PAL 1 frame)

For the memory block of a four-frame unit, nine 4 M-bit DRAMs are added to the configuration of a one-frame unit.

4 M-bit DRAM x 12 (NTSC 4 frames)

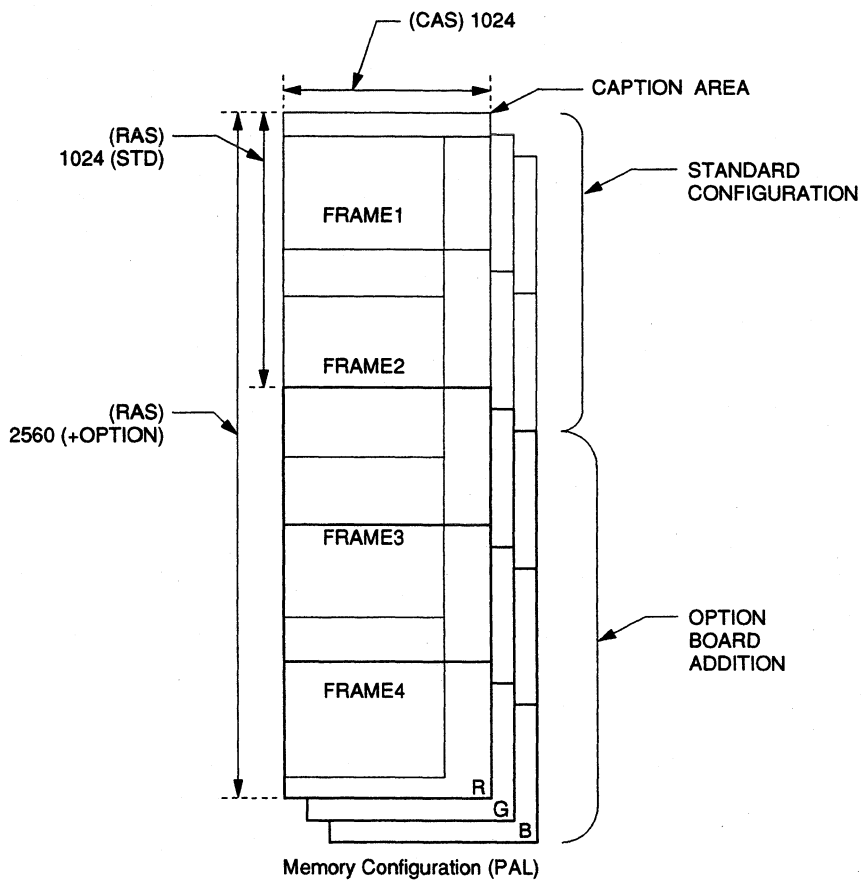
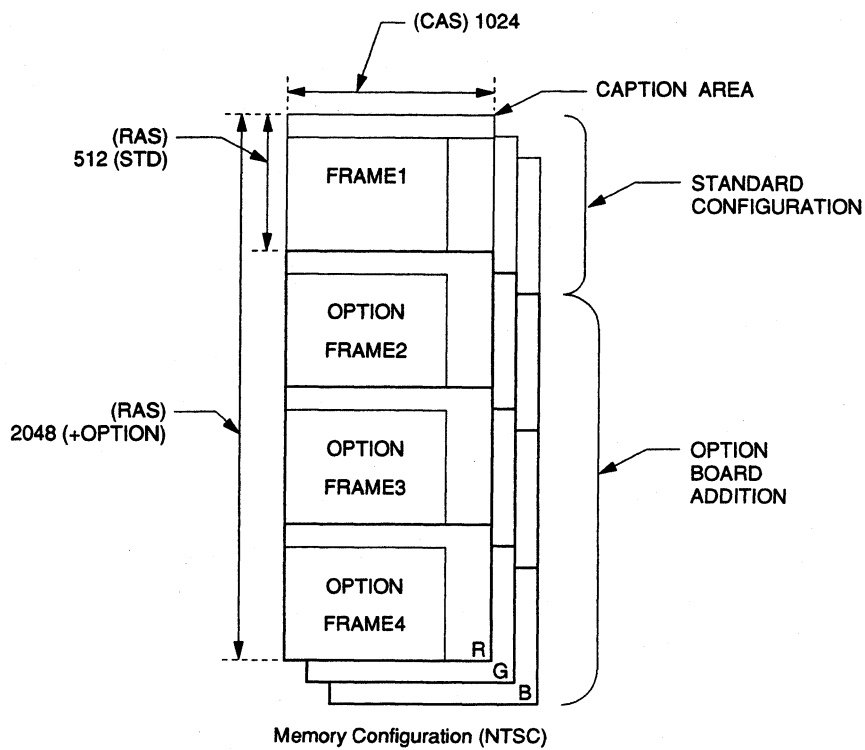
4 M-bit DRAM x 15 (PAL 4 frames)

The board has space enough to mount fifteen 4 M-bit DRAMs. The number of mounted DRAMs varies depending on the one-frame or four-frame unit. CPU obtains information such as the number of mounted DRAMs and NTSC/PAL application according to whether square-type chip conductors (0-ohm resistors) R5001 to R5006 are mounted or dismounted.

| Model (Destination)                     | OP0 (LVL) | OP0 (LVL) | 16M/4M (LVL) | Number of 4M DRAMs |
|-----------------------------------------|-----------|-----------|--------------|--------------------|
| UP-2800 (J/UC), 2900MD (J), 2300 (J/UC) | R5002 (L) | R5004 (L) | R5006 (L)    | 3                  |
| UP-2950MD (J)                           | R5001 (H) | R5004 (H) | R5006 (L)    | 12                 |
| UP-2800P (CE), 2900MD (UC), 2300P (CE)  | R5002 (L) | R5003 (L) | R5006 (L)    | 6                  |
| UP-2850P (CE), 2950MD (UC)              | R5001 (H) | R5003 (H) | R5006 (L)    | 15                 |

| Model (Destination)                     | DRAM reference                                                                             |
|-----------------------------------------|--------------------------------------------------------------------------------------------|
| UP-2800 (J/UC), 2900MD (J), 2300 (J/UC) | IC5003, 5010, 5015                                                                         |
| UP-2950MD (J)                           | IC5001, 5002, 5003, 5005, 5006, 5007, 5009, 5010, 5011, 5012, 5014, 5015                   |
| UP-2800P (CE), 2900MD (UC), 2300P (CE)  | IC5002, 5003, 5007, 5010, 5011, 5015                                                       |
| UP-2850P (CE), 2950MD (UC)              | IC5001, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5009, 5010, 5011, 5012, 5013, 5014, 5015 |

The memory space is constituted by 512(RAS) x 512(CAS) x 16 bits per color. It is virtually considered as 512(RAS) x 1024(CAS) x 8 bits during use when eight-bit video data is stored in the depth direction by two dots (two dots for one address). The video data is converted from 8 bits to 16 bits or 16 bits to 8 bits using a DRAM control circuit.

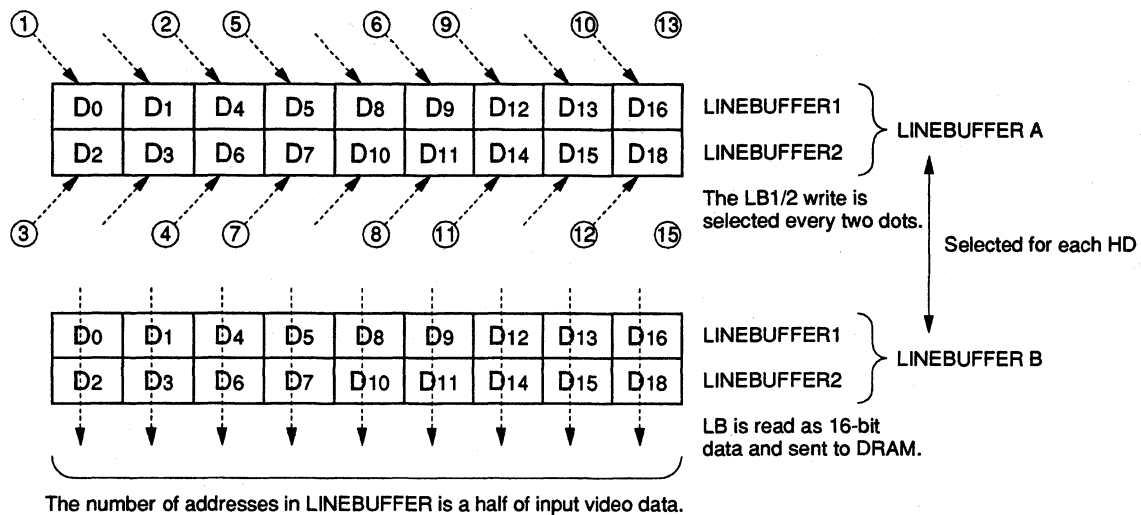




#### 4-1-5. Memory Control Block

A two-dot pixel is stored in one address in the depth direction using 16-bit DRAM so as to double the virtual DRAM access rate. The processing is performed using a standard cell circuit. This circuit is controlled by CPU.

Conversion between 8 bits and 16 bits during input video data capture (FULL)(Reversed during monitor output.)



#### Main operation of DRAM control circuit and its setting

- Capture operation
  - FULL image (SPLIT2H and IVP or the equivalent)
  - SPLIT2 image (Full field or the equivalent)
  - SPLIT4 image (Sticker or the equivalent)
  - SPLIT16 image Capture shift size
  - Write DRAM address
  - If the items above are set, the DRAM control circuit automatically performs the capture operation in synchronization with VD and HD signals.
- Print data output operation
  - Output data count
  - Read DRAM address
  - If the items above are set, the print data output operation is performed by triggering from CPU.
- Monitor output operation
  - FULL image (SPLIT2H, SPLIT4, SPLIT16, and IVP or the equivalent) SPLIT2 image (Decimated in the horizontal (H) direction.) STICKER (1/4-frame monitoring)

4in 1 image (The same as an SPLIT2 image in IC operation.)

Monitor output shift size

Read DRAM address

If the items above are set, the DRAM control circuit automatically performs the monitor output operation in synchronization with VD and HD signals.

- Random access operation

Write DRAM address

Write data

If the items above are set, the random access operation is performed by triggering from CPU during V blanking period.

- DRAM refresh operation

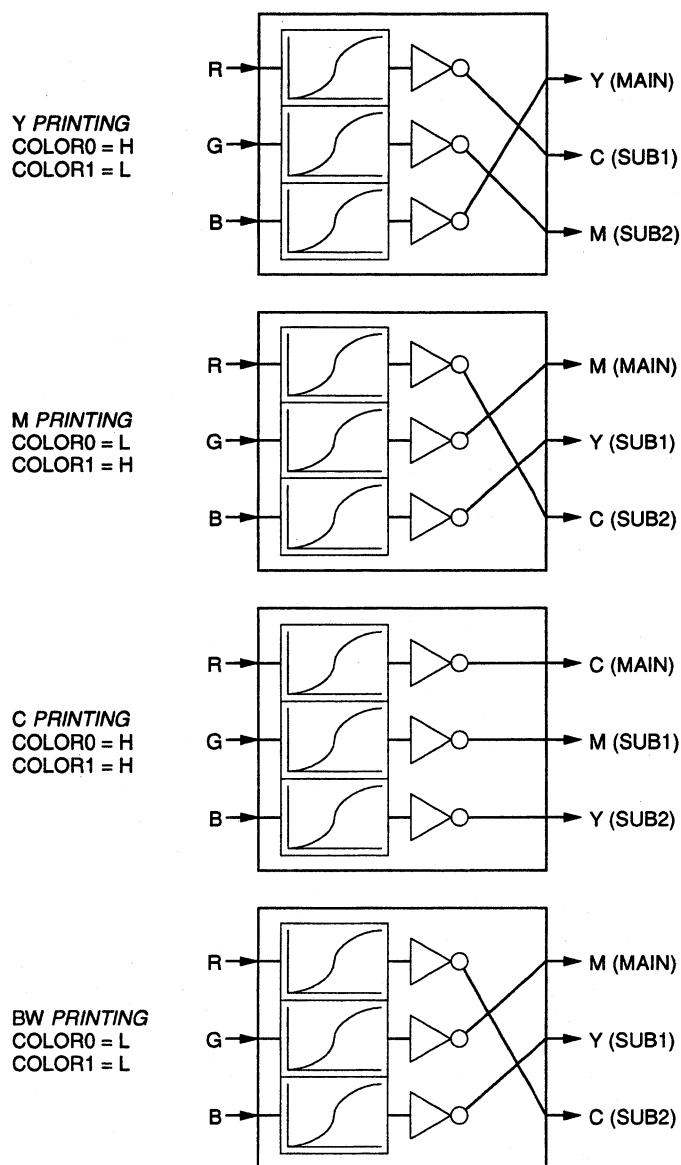
Number of refresh access addresses

If the item above is set, the DRAM control circuit automatically performs the DRAM refresh operation. (RAS-only refresh)

#### 4-1-6. Color Adjustment Block

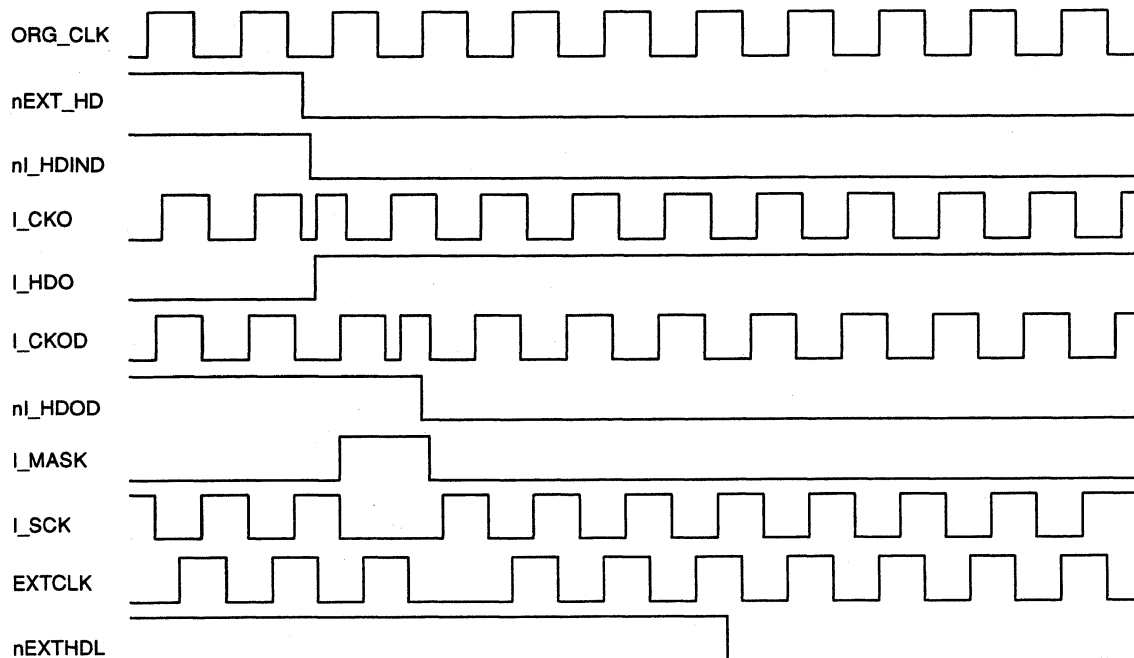
Video data is color-adjusted by IC3013 for video operation. For print operation, it is color-adjusted by an SRAM conversion table inside IC3012 (CXD8869Q).

The table data is contained in the ROM of a CPU program. The table data is rewritten during V blanking period for video operation. For print operation, it is rewritten immediately before print. On the print side, the color rotation and RGB/YMC-conversion of print data are also performed in addition to color adjustment. The print color information is obtained from the PRT-11 board as a COLOR 0/1 signal.



#### 4-1-7. Sampling Clock Generator

The sampling clock generator generates a sampling clock and distributes it to the DRAM control circuit and color adjustment circuit by locking the phase to the “high” level of external and internal sync signals. The clock frequency is 15.75032 MHz for both NTSC and PAL systems. The timing chart of operation is as shown below.



#### 4-1-8. Masking Block

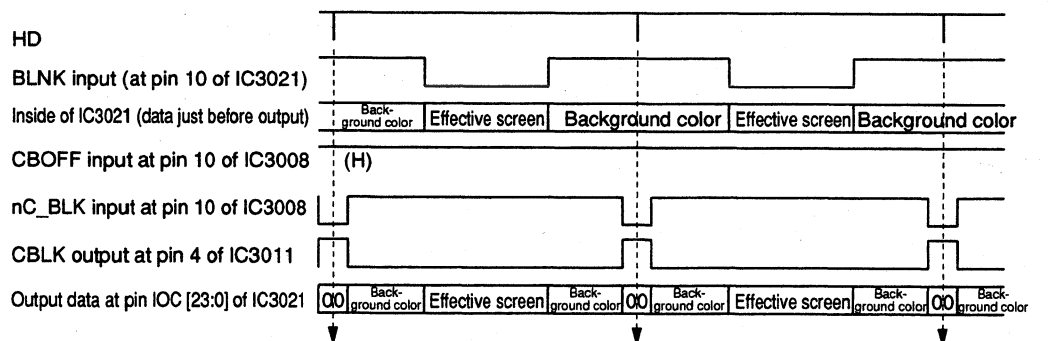
The masking block corrects the difference between the ideal reproduction color and three primary colors (Y, M, and C) for printed materials by a two-ROM data conversion system of main masking ROM and sub-masking ROM. The MAIN, SUB1, and SUB2 signals output from a color adjustment circuit (on the print side) are input to the main and sub-masking ROMs together with print color information signals (COLOR0 and COLOR1). The data masked using two ROM conversion tables is latched by IC3019 and output to the PRT-11 board as eight-bit print data.

#### 4-1-9. Bus Switcher

The bus switcher is a circuit (IC3021 CX8868Q) that switches a video bus. This circuit has three 24-bit ports (IOA, IOB, and IOC). The bus switching is controlled as shown below at pin 1 of the DIR0 terminal.

| DIR0 | DIR1 | Bus direction |
|------|------|---------------|
| 1    | 1    | IOA → IOC     |
| 1    | 0    | IOB → IOC     |
| 0    | X    | IOC → IOA     |

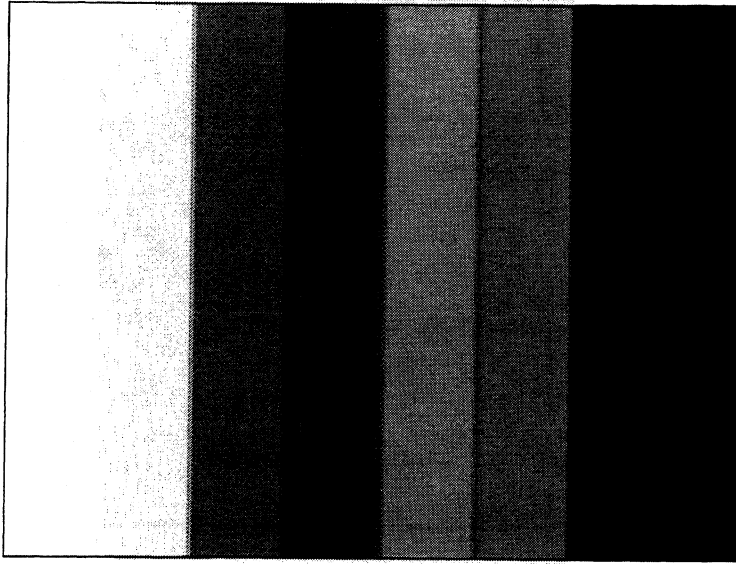
The output bus is set to "ALL LOW" by setting the FIX terminal "high". This function assigns the background color when the effective screen is decreased as shown below by the FIX, and DIR0, DIR1 terminals.



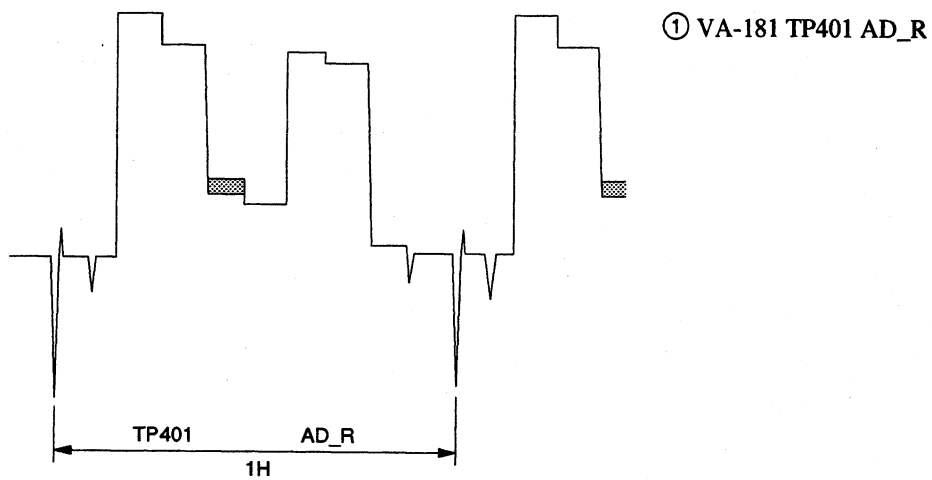
An analog composite blanking inversion signal is input to the 99-pin FIX terminal of IC3021 for clamping in this position and the video data sent to a D/A converter is set to "00".  
The BLNK signal from a DRAM control circuit is input to the 10-pin DIR1 terminal of IC3021 so as to switch the effective screen (IC3021 IOB [23:0]) and background (IC3021 IOA [23:0]).

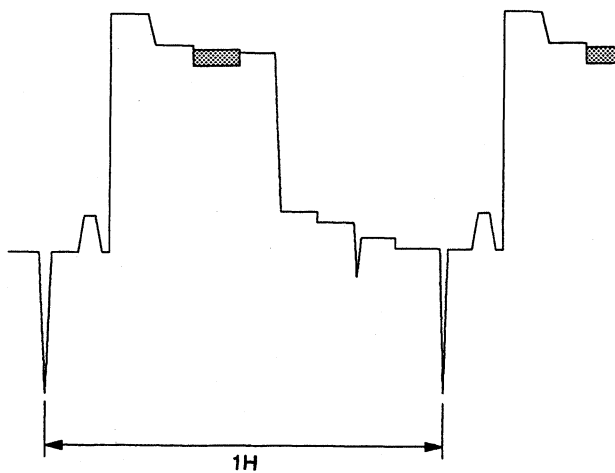
#### **4-1-10. A/D and D/A Conversion Blocks**

The A/D conversion block consists of three A/D converters (CXD1176Q IC1001 to IC1003). The analog RGB signal input from the VA-181 board is clamped using a clamp pulse nCLAMP signal. The clamped signal is then gain-adjusted using a CLP\_REF signal that is input to the VREF terminal of an A/D converter. The D/A conversion block consists of a three-channel D/A converter (CXD1178Q IC1005). An eight-bit digital RGB signal is converted into an analog RGB signal using a D/A converter. The voltage switched by the half-tone ON/OFF signal from the SY-250 board is sent to the VREF terminal of the A/D converter to produce a half-tone video signal on the menu screen.

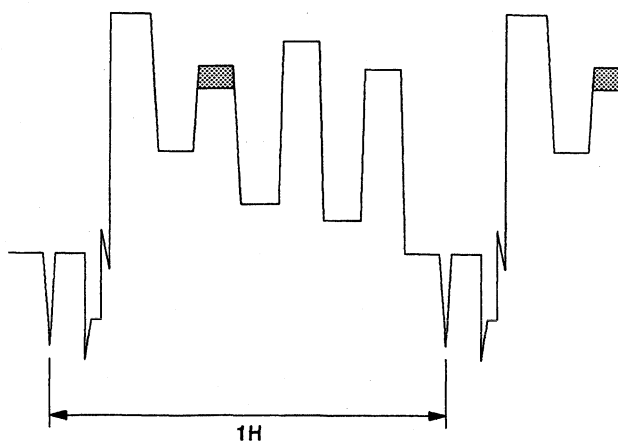


The waveform below is obtained when the color-bar signal shown above is input.

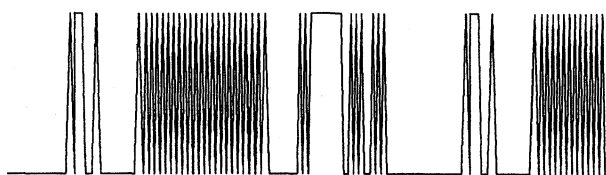




② VA-181 TP403 AD\_G



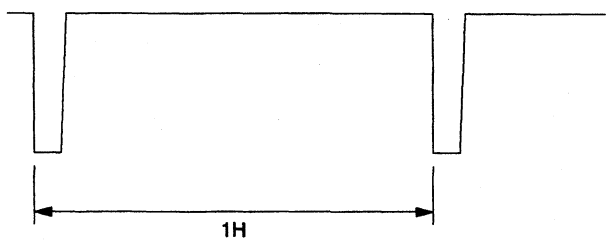
③ VA-181 TP404 AD\_B



④ FMY-21

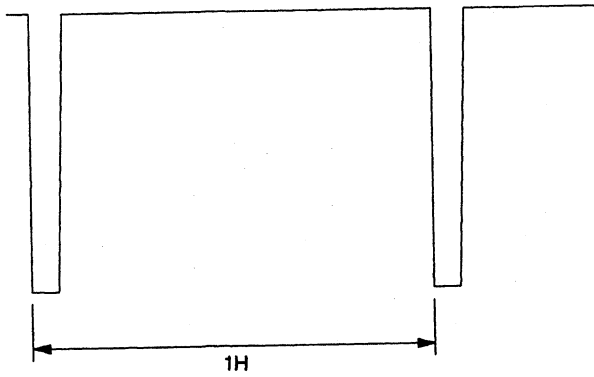
← TP4160 GAD3

(The third bit of the A/D-converted G-channel eight-bit data is was measured as an example. It varies with the input signal.)

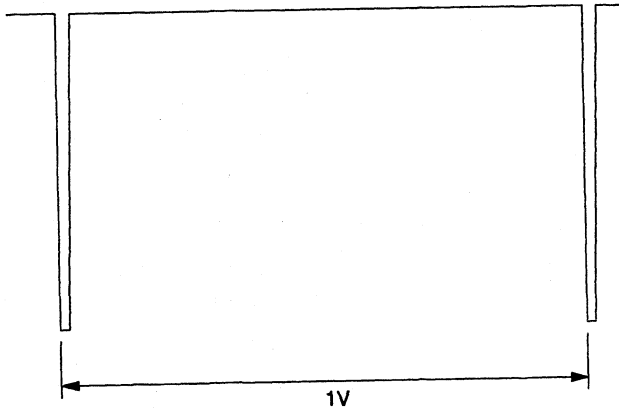


← TP4005 SWDHD (Triggered by this signal.)

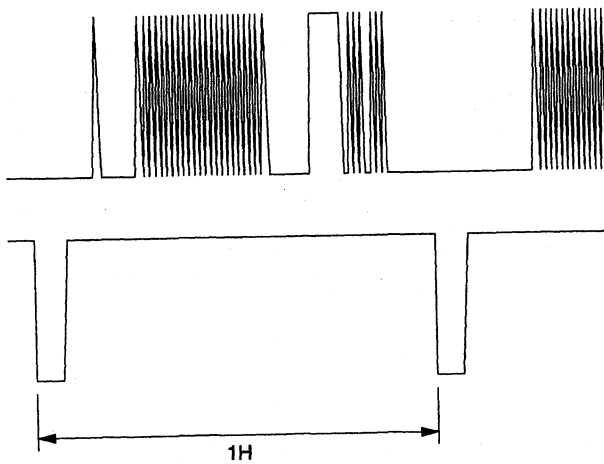




⑤ FMY-21  
TP4005 SWDHD

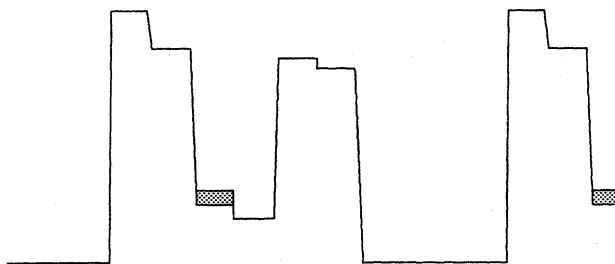


⑥ FMY-21  
TP2035 SWDVD



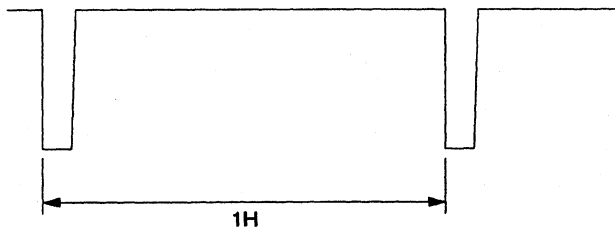
⑦ FMY-21 TP4136 GOD3  
Third bit (of the eight bits) of the G-channel data output  
from DRAM control circuit (IC4001) (Varies with the  
image.)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)



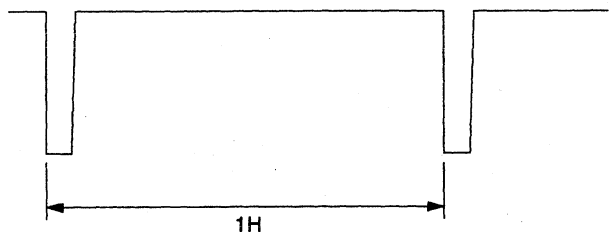
⑧ FMY-21 TP1004 DA-R  
(R-channel output data of D/A converter on the FMY board)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)



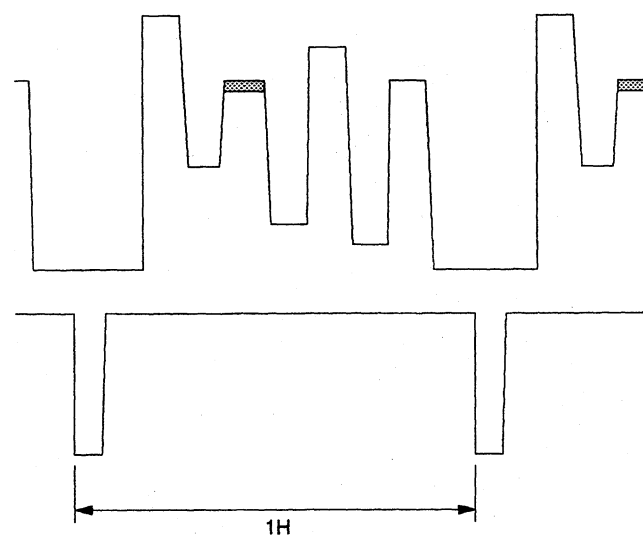
⑨ FMY-21 TP1005 DA-G  
(G-channel output data of D/A converter on the FMY board)

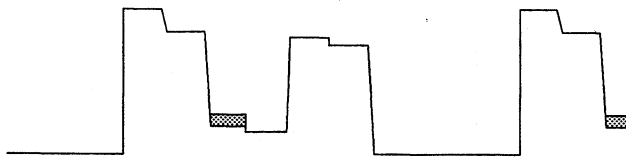
← FMY-21 TP4005 SWDHD (Triggered by this signal.)



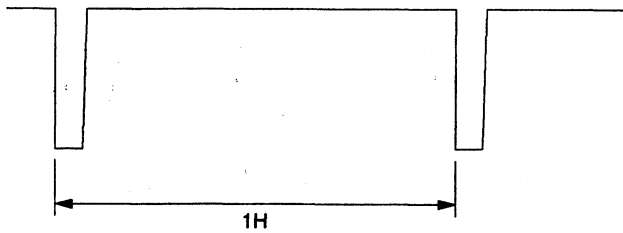
⑩ FMY-21 TP1006 DA-B  
(B-channel output data of D/A converter on the FMY board)

← FMY-21 TP4005 SWDHD (Triggered by this signal.)

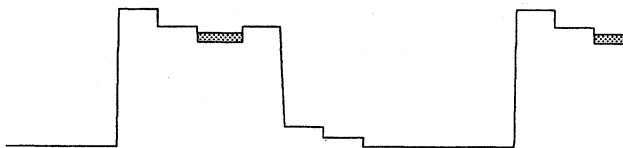




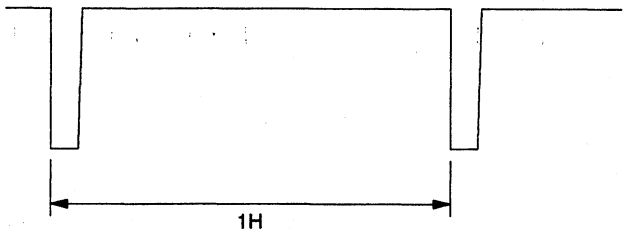
⑪ VA-181 TP803 ENC\_R  
(R-channel output data of encoder)



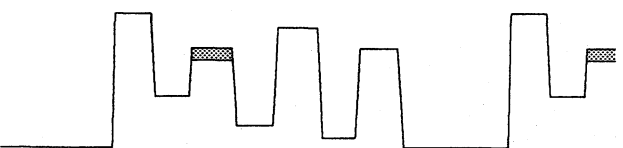
← FMY-21 TP4005 SWDHD (Triggered by this signal)



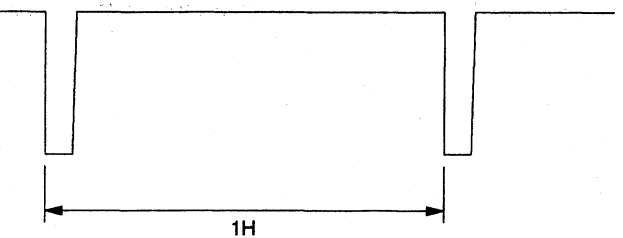
⑫ VA-181 TP802 ENC\_G  
(G-channel output data of encoder)



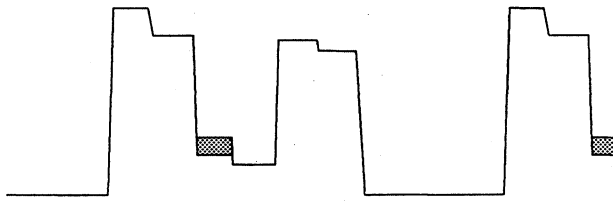
← FMY-21 TP4005 SWDHD (Triggered by this signal.)



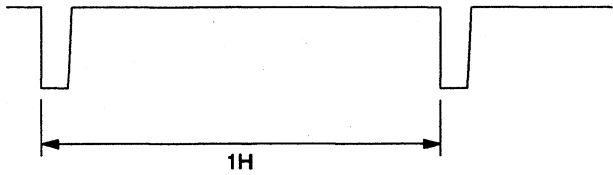
⑬ VA-181 TP804 ENC\_B  
(B-channel output data of encoder)



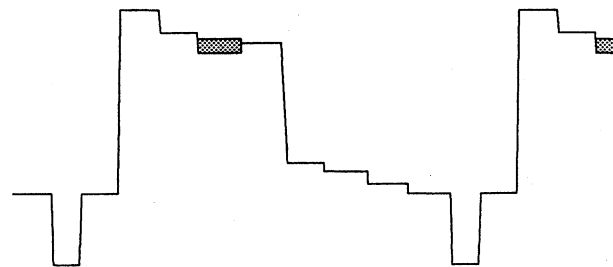
← FMY-21 TP4005 SWDHD (Triggered by this signal.)



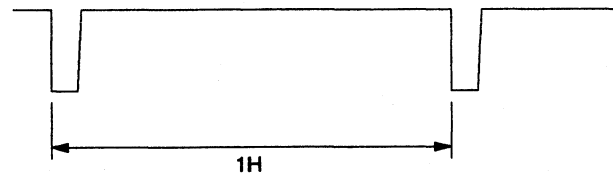
⑭ VA-181 TP901 R\_MONI



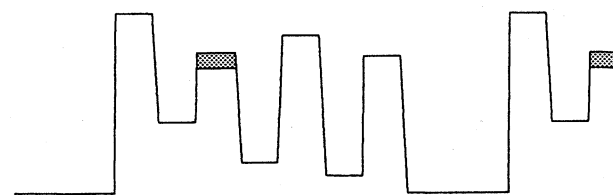
← VA-181 TP904 SYNC\_MONI(Triggered by this signal.)



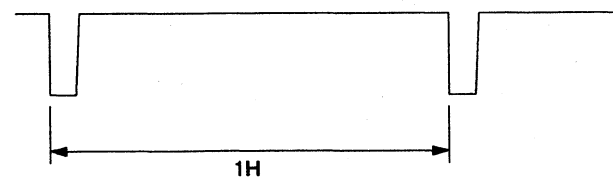
⑮ VA-181 TP902 G\_MONI



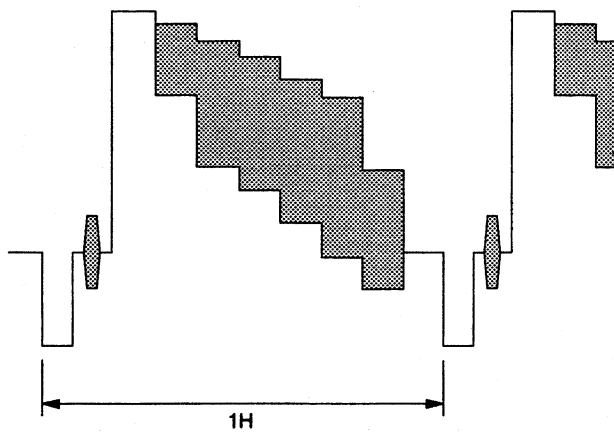
← VA-181 TP904 SYNC\_MONI(Triggered by this signal.)



⑯ VA-181 TP903 B\_MONI

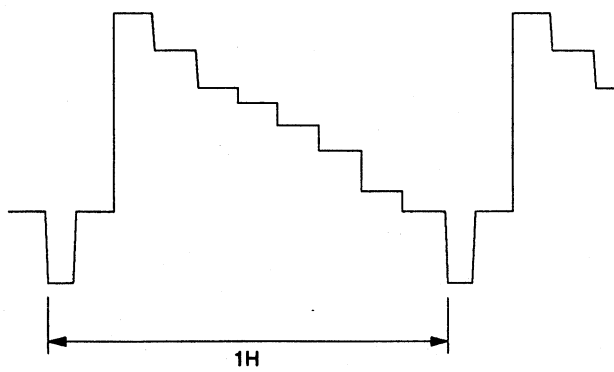


← VA-181 TP904 SYNC\_MONI(Triggered by this signal.)



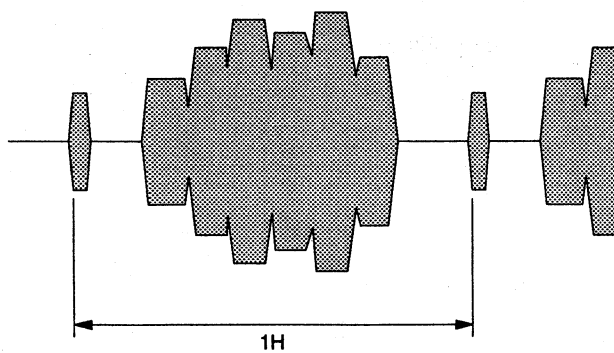
⑰ VA-181 TP907 V-MONI

Video signal



⑱ VA-181 TP905 Y-MONI

S-video Y signal



⑲ VA-181 TP906 C-MONI

S-video C signal

## 4-2. CIRCUIT OPERATION DESCRIPTION OF SY-250 BOARD

### 4-2-1. Address Map

| Address           |                  |
|-------------------|------------------|
| 00000h to 3ffffh  | EPROM(256KB)     |
| 40000h to 41ffffh | EPROM(16KB)      |
| 60000h to 60003h  | LCD              |
| a0000h to a0001h  | SCI(RS-232C)     |
| f0000h to f0003h  | KEY              |
| ff710h to fff0fh  | CPU built-in RAM |
| fff1ch to fffffh  | CPU built-in I/O |

### 4-2-2. Circuit Operation

#### (1) Reset circuit

The reset circuit uses PST572CMT (IC190). This circuit block outputs a reset pulse of approximately 60 msec during the power-on sequence. It also outputs a reset pulse when Vcc becomes less than 4.5 V during power-down operation. The reset pulse is input to the reset terminal (pin 63) of CPU (IC100). The SY-250 board outputs an external reset pulse from the reset output terminal (pin 59) so as to reset other boards when the CPU is reset.

#### (2) Oscillator circuit

The oscillator circuit uses a crystal oscillator (X100) and CPU and generates a clock of 9.8304 MHz. It also frequency-divides the clock using a CPU built-in timer, outputs a clock (changing corresponding to the RS communication rate) of 19.2 to 153.6 kHz from the clock output terminal (pin 96), and sends it to the serial communication circuit (IC250).

| IC100 96pin | BAUDRATE |
|-------------|----------|
| 19.2 kHz    | 1200     |
| 38.4 kHz    | 2400     |
| 76.8 kHz    | 4800     |
| 153.6 kHz   | 9600     |

#### (3) Nonvolatile memory

The nonvolatile memory sets each menu to the 8192 x 8 bit EEPROM (IC220, HN58C 66FP-25) connected to a CPU bus and stores a caption character string. During system start, data is read from this nonvolatile memory.

#### (4) LED driving

PRINT LED: lights during print.

ALARM LED: Lights when an error occurs in a printer.

#### (5) Buzzer driving

The CPU outputs a buzzer drive pulse from the buzzer output terminal (pin 98) when any key is input or when an error occurs. No buzzer sounds when "BEEP: OFF" is set in the menu.

#### (6) Liquid crystal display (LCD) control

The CPU and LCD block are connected through a bus by HC245 (IC230). The LCD concentration can be adjusted when LCD-CONTR is set in the menu. No LCD display appears on the standard screen when the setting value is set to OFF.

(7) Screen display control

The screen display is controlled by  $\mu$ PD6466 (IC150) connected with CPU in series.

The V-SYNC and H-SYNC signals (at pins 7 and 8 of connector CN1004) from the VA-181 board must be input to operate  $\mu$ PD6466.

(8) Key input

The CPU and key matrix output circuit are connected through a bus by HC245 (IC 220).

HC138 (IC110) controls the key matrix circuit. The key is connected in the order of CN1002 → PRT-11 → KY-402 and CN1003 → KY-401.

(9) Infrared remote control receiving circuit

The infrared remote control pulse sent by wireless remote control operation is transferred in the order of IC302 → J001 → IC301 → CPU. Therefore, the wireless remote control operation may malfunction when J001 fails. The remote control pulse sent by wired operation begins with J001. In the wireless mode, the infrared remote control pulse is received by the infrared remote control receiving circuit on the KY-401 board.

(10) Remote 2 input

A digital or analog foot switch is connected to J002. A digital signal is processed by IC302, and an analog signal is processed by IC300.

(11) BUSY output

UP-2900MD(J) and UP-2950MD(J) mount switch SW140. The TTL output or open collector output can be switched by selecting this switch.

(12) X-contact output

UP-2300P(CE) mounts a solid state relay (IC500). CPU drives the relay 2 V before an image is fetched. No relay is driven when "IMMEDCAP: ON" is set in the menu.

### 4-2-3. VA-181 Board Control

#### (1) Electronic volume-related signal

Function : Finely adjusts the analog board.

Signal lines : ADJ-LD     Data latching  
                 ADJ-CLK     Serial data clock  
                 ADJ-D1     Serial data

Remarks : The target is the circuit on the VA board.  
            The center value during adjustment is adjusted by the semi-fixed VR on the VA board.

#### (2) Screen display-related signal

Function : Generates a signal for screen display.

Signal lines : OSD\_R     R data for screen display  
                 OSD\_G     G data for screen display  
                 OSD\_B     B data for screen display  
                 OSD\_BLK   Blanking data for screen display

#### (3) Screen display control

Function : Specifies whether to superimpose the screen display.

Signal line : OSD\_ON\_OFF  
                 H : Superimpose     L : Not superimpose

#### (4) Input signal selection control

Function : Specifies an input signal.

Signal lines : INPUT\_SEL0  
                 H : Video     L : S-video  
                 INPUT\_SEL1  
                 H : RGB     L : INPUT\_SEL0 setting

Remarks : The INPUT\_SEL0 setting is validated when INPUT\_SEL1 is low.

#### (5) G on SYNC control

Function : Specifies whether to superimpose a sync signal on the G output signal.

Signal line : SYNC\_ON\_OFF  
                 H : Superimpose     L : Not superimpose

#### (6) Video circuit control

Function : Specifies a video circuit (525/625).

Signal line : SET\_525\_625  
                 H : 525 signal     L : 625 signal

#### (7) AGC control

Function : Specifies an AGC function.

Signal line : AGC\_ON\_OFF  
                 H : AGC control     L : No AGC control

#### (8) Output video signal

Function : Selects the output.

Signal : TH\_NEE  
                 H : THROUGH     L : EE



(9) Signal input confirmation

Function : Confirms whether an input signal exists.

Signal line : SIG\_DET

H : No receive signal

L : Receive signal

(10) Input signal type confirmation

Function : Confirms whether the input signal is 525 or 625.

Signal line : DET\_525\_625

H : 525 signal

L : 625 signal

(11) Video mode confirmation

Function : Confirms the video mode set by the user.

Signal line : SW\_NTSC\_PAL

H : 525 signal

L : 625 signal

Remarks : High and low levels are determined by the selector switch on the rear panel of UP-2900MD(UC) and UP-2950MD(UC). In other models, a high or low level is fixed by mounting VA.

(12) Board mount information

Function : Confirms the VA board specifications.

Signal lines : nMT\_RGB

H : No RGB

L : RGB

nMT\_COMPATIBLE

H : Each NTSC or PAL

H : NTSC and PAL compatible

(13) Half-tone signal (FMY board)

Function : Specifies the video output.

Signal line : HALFTONE

H: Half-tone display

L: Ordinary display

#### 4-2-4. Communication

##### (1) RS-232C interface

μPD71051GU (IC250) is used for serial-to-parallel conversion, and MAX202CSE (I C280 and IC281) for level conversion.

The last output is +8 V when active and -8 V when inactive.

The output at test point is 0 V when active and +5 V when inactive.

##### Data transfer format

Data length : 8 bits  
Stop bit : 1  
Parity bit : None  
Baud rate : 1200, 2400, 4800, or 9600 bps (switchable)

##### Signal lines related to communication

RS-TXD Printer → External communication data  
RS-RXD External → Printer communication data  
RS-RTS Active : External → Printer communication enabled  
Inactive : External → Printer communication disabled  
RS-CTS Active : Printer → External communication enabled  
Inactive : Printer → External communication disabled  
RS-DTR Active : Printer is in the operation state.  
RS-DSR Active : Printer is in the external operation state.

##### (2) Interface with PRT board

Bidirectional communication is performed by the asynchronous serial communication that uses a CPU built-in serial communication interface (CH.0).

##### Data transfer format

Data length : 8 bits  
Stop bit : 1  
Parity bit : None  
Baud rate : 4800 bps

##### Signal lines related to communication

PRT-TXD SY → PRT communication data  
PRT-RXD PRT → SY communication data  
PRT-RTS H : PRT → SY communication disabled  
L : PRT → SY communication enabled  
PRT-CTS H : SY → PRT communication disabled  
L : SY → PRT communication enabled

### (3) Interface with FMY board

Bidirectional communication is performed by the asynchronous serial communication that uses a CPU built-in serial communication interface (CH.1).

#### Data transfer format

Data length : 8 bits  
Stop bit : 1  
Parity bit : None  
Baud rate : 19200 bps

#### Signal lines related to communication

|         |                                                                           |
|---------|---------------------------------------------------------------------------|
| FMY-TXD | SY → FMY communication data                                               |
| FMY-RXD | FMY → SY communication data                                               |
| FMY-RTS | H : FMY → SY communication disabled<br>L : FMY → SY communication enabled |
| FMY-CTS | H : SY → FMY communication disabled<br>L : SY → FMY communication enabled |

|        |                                  |                                    |                               |                                      |                                   |                               |                                    |                                               |
|--------|----------------------------------|------------------------------------|-------------------------------|--------------------------------------|-----------------------------------|-------------------------------|------------------------------------|-----------------------------------------------|
| Port 1 | [36]<br>A0<br>BUS                | [37]<br>A1<br>BUS                  | [38]<br>A2<br>BUS             | [39]<br>A3<br>BUS                    | [40]<br>A4<br>BUS                 | [41]<br>A5<br>BUS             | [42]<br>A6<br>BUS                  | [43]<br>A7<br>BUS                             |
| Port 2 | [45]<br>A8<br>BUS                | [46]<br>A9<br>BUS                  | [47]<br>A10<br>BUS            | [48]<br>A11<br>BUS                   | [49]<br>A12<br>BUS                | [50]<br>A13<br>BUS            | [51]<br>A14<br>BUS                 | [52]<br>A15<br>BUS                            |
| Port 3 | [27]<br>D0 (D8)<br>BUS           | [28]<br>D1 (D9)<br>BUS             | [29]<br>D2 (D10)<br>BUS       | [30]<br>D3 (D11)<br>BUS              | [31]<br>D4 (D12)<br>BUS           | [32]<br>D5 (D13)<br>BUS       | [33]<br>D6 (D14)<br>BUS            | [34]<br>D7 (D15)<br>BUS                       |
| Port 4 | [18]<br>PRT-RTS<br>Out-Port      | [19]<br>FMY-RTS<br>Out-Port        | [20]<br>ADJ-LD<br>Out-Port    | [21]<br>ADJ-CLK<br>Out-Port          | [23]<br>ADJ-D<br>Out-Port         | [24]<br>OSD-CLK<br>Out-Port   | [25]<br>OSD-CS<br>Out-Port         | [26]<br>OSD-D<br>Out-Port                     |
| Port 5 | [53]<br>A16<br>BUS               | [54]<br>A17<br>BUS                 | [55]<br>A18<br>BUS            | [56]<br>A19<br>BUS                   |                                   |                               |                                    |                                               |
| Port 6 | [58]<br>Capture Mask<br>Out-Port | [59]<br>ext-RESET<br>Out-Port      | [60]<br>Halfone<br>Out-Port   | [69]<br>AS<br>BUS                    | [70]<br>RD<br>BUS                 | [71]<br>HWE<br>BUS            | [72]<br>LWE<br>BUS                 |                                               |
| Port 7 | [78]<br>RGB525/625<br>In-Port    | [79]<br>FMY-Capturing<br>In-Port   | [80]<br>FMY Busy<br>In-Port   | [81]<br>DET525/625<br>In-Port        | [82]<br>signal-detect<br>In-Port  | [83]<br>EEPROM/RDY<br>In-Port | [84]<br>Remote2 in analog<br>In-AD | [85]<br>LCD cont.<br>Out-DA                   |
| Port 8 | [87]<br>FMY-ExtVD<br>IRQ0        | [88]<br>Remote2 in Digital<br>IRQ0 | [89]<br>RS232C-rcv<br>IRQ0    | [90]<br>*** FREE ***<br>IRQ3/In-Port | [91]<br>P_COOLING<br>IRQ3/In-Port |                               |                                    |                                               |
| Port 9 | [12]<br>PRT-TXD<br>TXD0          | [13]<br>FMT-TXD<br>TXD1            | [14]<br>PRT-RXD<br>RXD0       | [15]<br>FMY-RXD<br>RXD1              | [16]<br>PRT-CTS<br>IRQ4           | [17]<br>FMY-CTS<br>IRQ5       |                                    |                                               |
| Port A | [94]<br>Remote2 out<br>Out-Port  | [94]<br>PRINT LED<br>Out-Port      | [95]<br>ALARM LED<br>Out-Port | [96]<br>SCI Xfer Clock<br>Out-Timer0 | [97]<br>THRU/EE<br>Out-Port       | [98]<br>BUZZER<br>Out-Timer2  | [99]<br>IR-detect1<br>In-Timer2    | [100]<br>IR-detect2<br>In-Timer2              |
| Port B | [2]<br>Input Select1<br>Out-Port | [3]<br>Input Select2<br>Out-Port   | [4]<br>Set525/625<br>Out-Port | [5]<br>AGC On/Off<br>Out-Port        | [6]<br>X-DRIVE<br>Out-Port        | [7]<br>Sync On G<br>Out-Port  | [8]<br>Photo-X<br>Out-Port         | [9]<br>OSD On/Off<br>Out-Port                 |
| ETC    | [10]<br>(PULL-UP)<br>RES0        | [61]<br>SCI IC Clock<br>ø          | [62]<br>Vcc<br>STBY           | [63]<br>Reset<br>RESET               | [64]<br>Vcc<br>NMI                | [66]<br>X'tal<br>EXTAL        | [67]<br>X'tal<br>XTAL              |                                               |
|        | [73]<br>Vcc<br>MD0               | [74]<br>Vss<br>MD1                 | [75]<br>Vcc<br>MD2            | [76]<br>Vcc<br>Avcc                  | [77]<br>Vcc<br>Vref               | [86]<br>Vss<br>Avss           |                                    | Pin No.<br>Connected circuit<br>Function name |

## 4-3. ANALOG VIDEO SIGNAL PROCESSING BLOCK

### 4-3-1. Outline

The analog block mainly consists of the two blocks below.

1) Interface block (IF-672 board) (IF-710 board)

A video signal is input and output through this interface block. This block also directly outputs the input signal when the monitor mode is set to THROUGH and when the power of this unit is turned off.

2) Decoder and encoder blocks (VA-181 board) These blocks fetch the input signal into memory and monitor the signal from memory.

The major functions of the decoder and encoder blocks are as follows:

- \* Input signal selection (Video, Y/C, or RGB)
- \* Conversion of video and Y/C signals into RGB signal
- \* Various user adjustments (Hue, color, gain, offset, and monitor RGB)
- \* Sync signal processing (NTSC/PAL detection, sync separation, signal detection, and AFC)
- \* Character screen display
- \* Monitor signal selection (Source memory)
- \* Conversion of signal from monitor into video and Y/C signals (Encoder)

### 4-3-2. IF-672 Board (IF-710 Board) (Interface Block)

A mechanical relay is used so that input and output signals are in the through state when an output signal is selected and when the power is turned off. The switch that sets in which mode (NTSC or PAL) this unit should be operated is also mounted on the IF-672 board. This switch is validated only when the power is turned on (in a combined NTSC/PAL model).

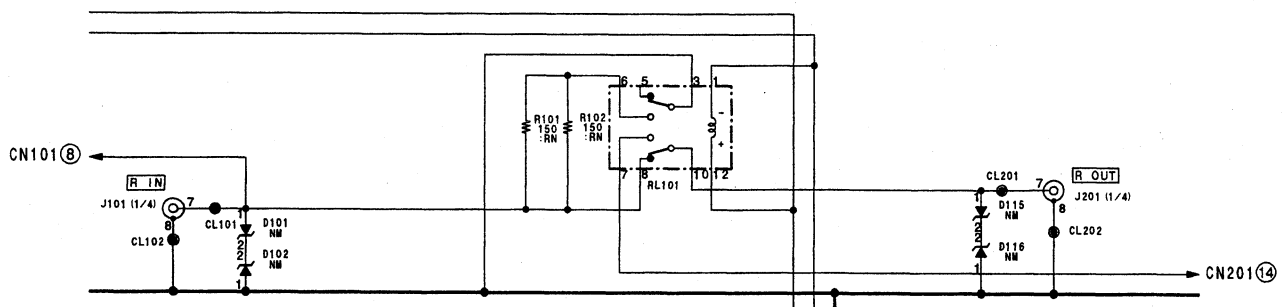


Fig. 1-1 Circuit Diagram of IF-672 Board

### 4-3-3. VA-181 Board (Decoder and Encoder Blocks)

Decoder and encoder circuits are separately described below.

#### (1) Input signal processing block (Decoder circuit)

##### 1) RGB/SYNC input block

The R, G, and B signals passed through the IF-672 board are amplified to two times the normal using base-grounded amplifiers (Q101, Q102, and Q103). The signals are then input to video switches (IC305, IC306, and IC307). The signal level at that time is approximately 1.4 Vp-p (video). A sync input signal is buffered using base-grounded amplifiers (Q104 and Q110) and input to the video switch (IC602). Simultaneously, the signal is clamped by C120 and Q111 and pulse-converted by Q112 to trigger IC101. While the sync signal is input, IC101 is triggered and pin 6 is fixed to high level. When no sync signal is input, IC101 is not triggered and pin 6 is set low. In this case, a G input (SYNC ON GREEN) signal is selected by IC102.

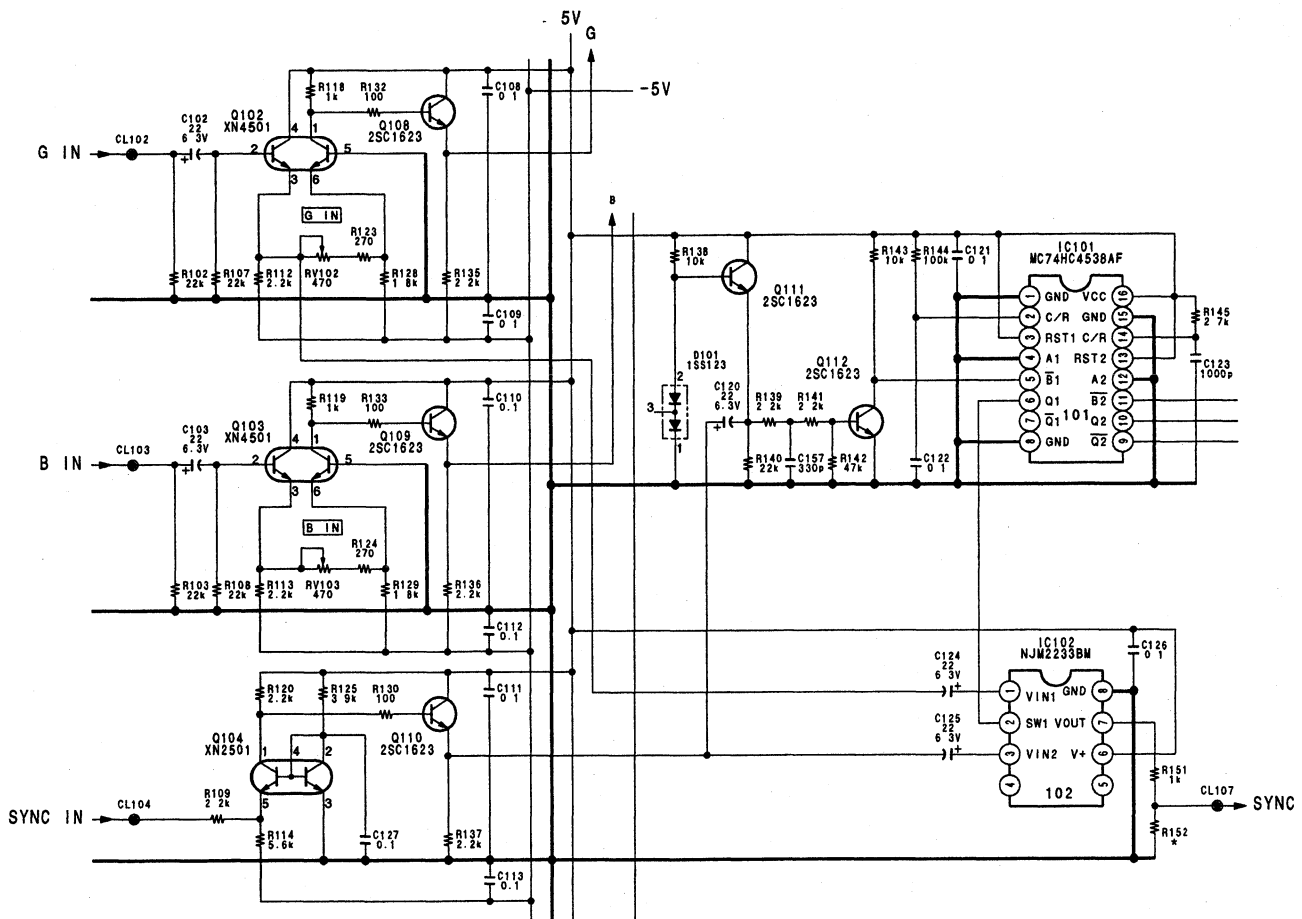


Fig. 1-2 Circuit Diagram of Input Block

2) Y/C input circuit

The Y/C input signal passed through the IF-672 board (IF-710 board) is buffered (by Q105 and Q106) and input to video switches (IC103 and IC608).

3) Video signal input circuit

The video input signal passed through the IF-672 board (IF-710 board) is amplified to about three times the normal by buffer amplifiers (Q202 and Q203) via a band limit filter (FL203). The signal is then input to the digital comb filter (DCF)(IC201 ). The signal level at that time is approximately 1.6 Vp-p.

4) Y/C separation block

The Y/C separation block consists of a digital comb filter (IC201) and 4 Fsc clock generator (IC608).

The video signal input to IC201 is separated into Y and C signals and output from pins 31 and 39, respectively. The Y signal is passed through a low-pass filter (FL201) and buffer (Q209) and input to the video switch (IC103). The signal is then selected as a Y signal of the Y/C input signal by IC103. The C signal is passed through a low-pass filter (FL202) and input to pin 26 of IC608. The signal is then selected at pin 27 as a C signal of the Y/C input signal.

The Y and C signals selected by an input selector are input to pins 2 and 8 of IC608, and the subcarrier (SC) and 4 Fsc clock locked to the burst portion of an input signal are output from pins 24 and 17. The subcarrier is used during source screen output of an encoder. The 4 Fsc clock is input to pin 11 of the digital comb filter to judge the existence of a burst signal in the digital comb filter. A high signal is output from pin 16 when the burst signal exists.

A low signal is output when no burst signal exists. This judgment is used for the bypass of the digital comb filter or the subcarrier selection of the encoder.

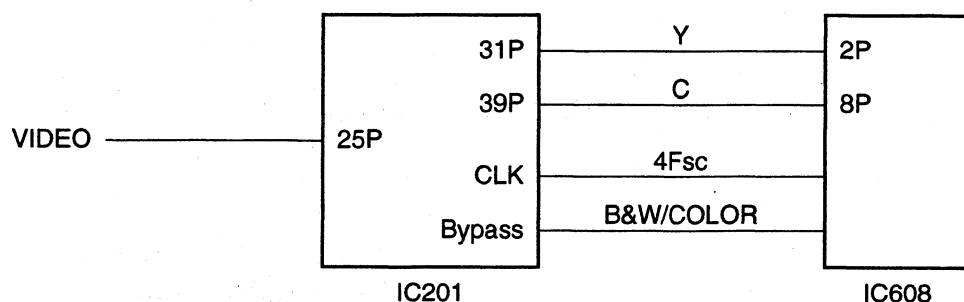


Fig. 1-3 Block Diagram of Y/C Separation

### 5) Sync separation circuit (IC606)

The Y signal selected by IC103 is input to pin 31 of IC606 via a delay line of 340 nsec. The sync signal selected by IC102 is input to pin 35 of IC606. It is also input to pin 24 of IC606 (video switch block). The signal input to pin 24 is sync-AGCed and output from pin 20. The output signal is then passed through a filter and input to pin 37. The signal input to pin 37 is sync-separated. At that time, the HD signal at pin 4, VD signal at pin 15, C sync signal at pin 40, and BF signal at pin 9 are output.

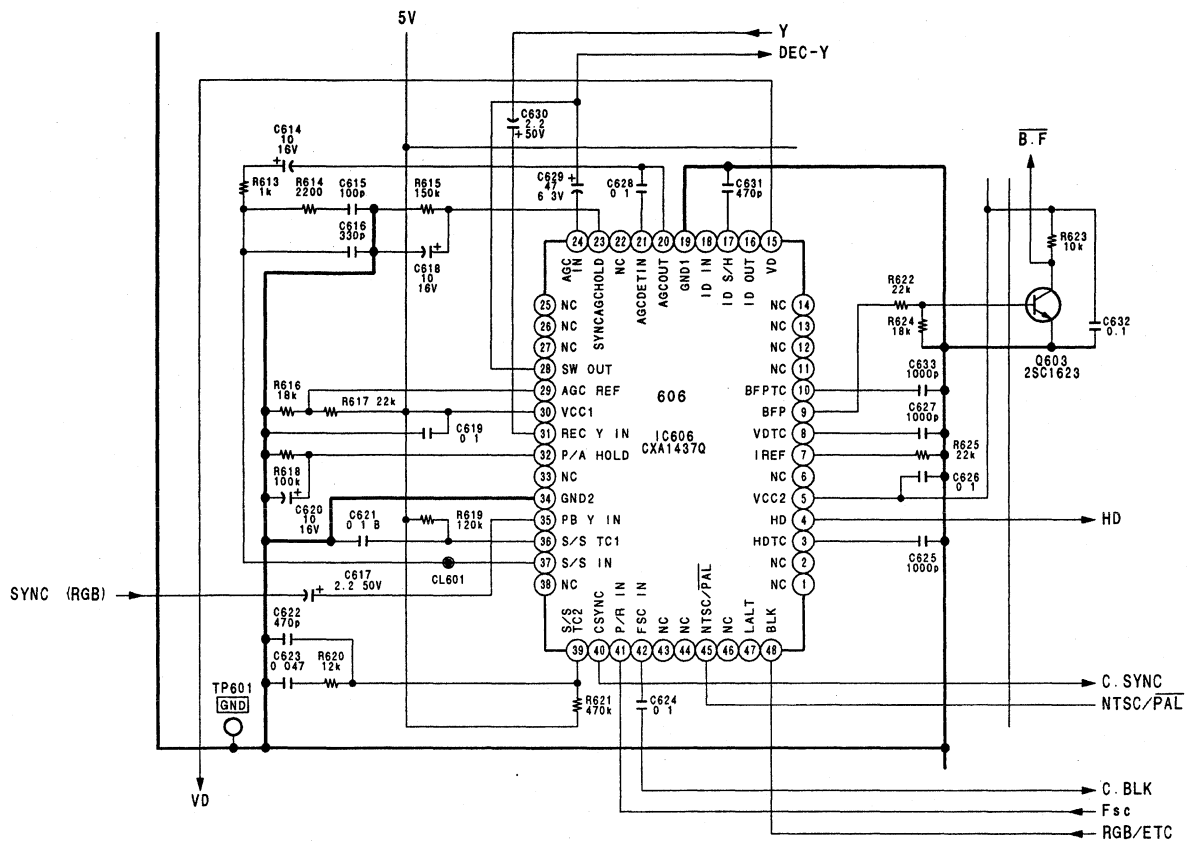


Fig. 1-4 Circuit Diagram of Sync Separation



- 6) Y/C jungle block  
IC301 (CXA1213BS) performs the AFC operation of a sync signal and converts the Y/C signal into R, G, and B signals when a video signal or Y/C signal is input. IC301 also adjusts the picture quality of hue and color.
- 7) Sync system circuit in IC301  
The Y signal output from IC606 is amplified to four times the normal using a video amplifier (IC308) so as to produce a signal level of 2 Vp-p. The signal is then input to pins 31 (H sync processing system) and 14 (V sync processing system) of IC301.  
The signal input to pin 31 is sync-separated internally, and a pulse is output from pin 27 via AFC. The pulse is then input to pin 4 of IC601 (monostable multivibrator) to produce a pulse with pulse width of approximately 4  $\mu$ sec lastly.  
The signal input from pin 14 judges 50 Hz or 60 Hz in IC301 according to the period. For 50 Hz, a low signal is output from pin 13. For 60 Hz, a high signal is output from pin 13.
- 8) Y/C system circuit in IC301  
The Y signal output from IC606 is amplified to two times the normal by IC308 to produce a signal level of 1 Vp-p. The signal is then input to pin 46. The C signal output from IC608 is input to pin 1. The input Y and C signals are processed in a circuit and output from pins 39, 38, and 37 as R, G, and B signals.  
IC301 presupposes to be used for a monitor. IC301 also emphasizes the flesh tint in a demodulation axis when an NTSC signal is input. In a printer, it is important to reproduce the primary color accurately. Therefore, the demodulation axis must be corrected theoretically. The correction is performed by resistor matrix circuits (R326, R327, R325, R328, and R329). Since no correction is required during PAL demodulation, the matrix circuit is set to OFF by IC302 and IC303.
- 9) RGB, Y/C, and video selection circuit  
The R, G, and B signals output from IC301 are input through buffers (Q305 to Q 307) to IC305, IC306, and IC307. The RGB input signals and other input signals are selected in IC305, IC306, and IC307.
- 10) VD pulse generator circuit  
The VD pulse output from pin 15 of IC606 is input to IC604 (monostable multivibrator) and output as a pulse of approximately 400  $\mu$ sec. The retrigger inhibit mode of IC604 is used for masking to prevent a V SYNC signal from being disturbed during special PB of VTR.
- 11) Electronic VR circuit (IC611)  
An eight-channel D/A converter (IC611) is used to perform the user adjustment electronically. The eight-channel D/A converter can be adjusted in eight-bit precision by sending a command from the system control board (SY-250) to pins 15, 16, and 17 of IC611. The output signals at pins 4 and 5 are assigned for hue and color adjustment and input to IC304. The input signal is then inverted and amplified, and adjusted in the center by RV307 and RV306.

The output signals at pins 3, 6, 7, 2, 18, and 19 are used for offset, gain (AGC ON), gain (AGC OFF), and monitor RGB adjustments.

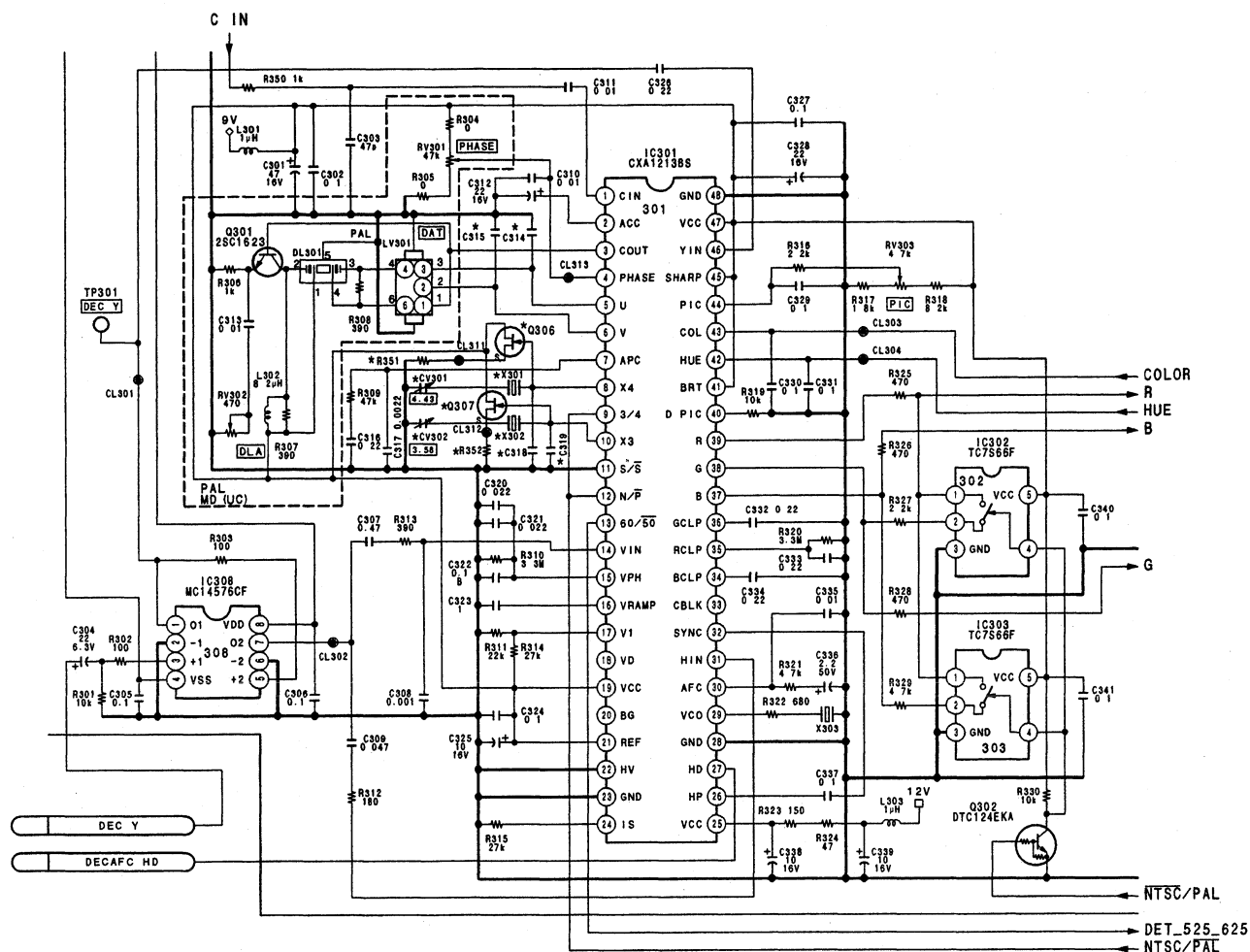


Fig. 1-5 Circuit Diagram of Decoder Block

## 12) AGC circuit

This unit uses a peak AGC circuit suitable for a medical market. The R, G, and B signals output from IC305, IC306, and IC307 are pedestal-clamped by IC401, IC402, and IC403. Next, the maximum voltage of the RGB signals is extracted by Q401, Q403, and Q405 and input through a low-pass filter to pin 3 of IC407 (operational amplifier). The input signal is input through a voltage follower to pin 6, inverted and amplified, and output from pin 7. At pin 7, the signal is center-adjusted by RV401.

The signal output from pin 7 is mixed with a D/A converter output signal for user adjustment and input to pin 3 of IC409. The signal is then input through a voltage follower to pin 7 of IC408 (analog switch). Only the user adjustment signal from pin 6 is selected as a (AGC OFF) output signal. The output signal at pin 1 of IC408 is used for gain adjustment of amplifiers IC404 to IC406. The pedestal-clamped R, G, and B signals are band-limited by FL301 to FL303 and gain-controlled by amplifiers IC404 to IC406. The signals are then sent to the FMY-21 board in 2 Vp-p by a drive amplifier.

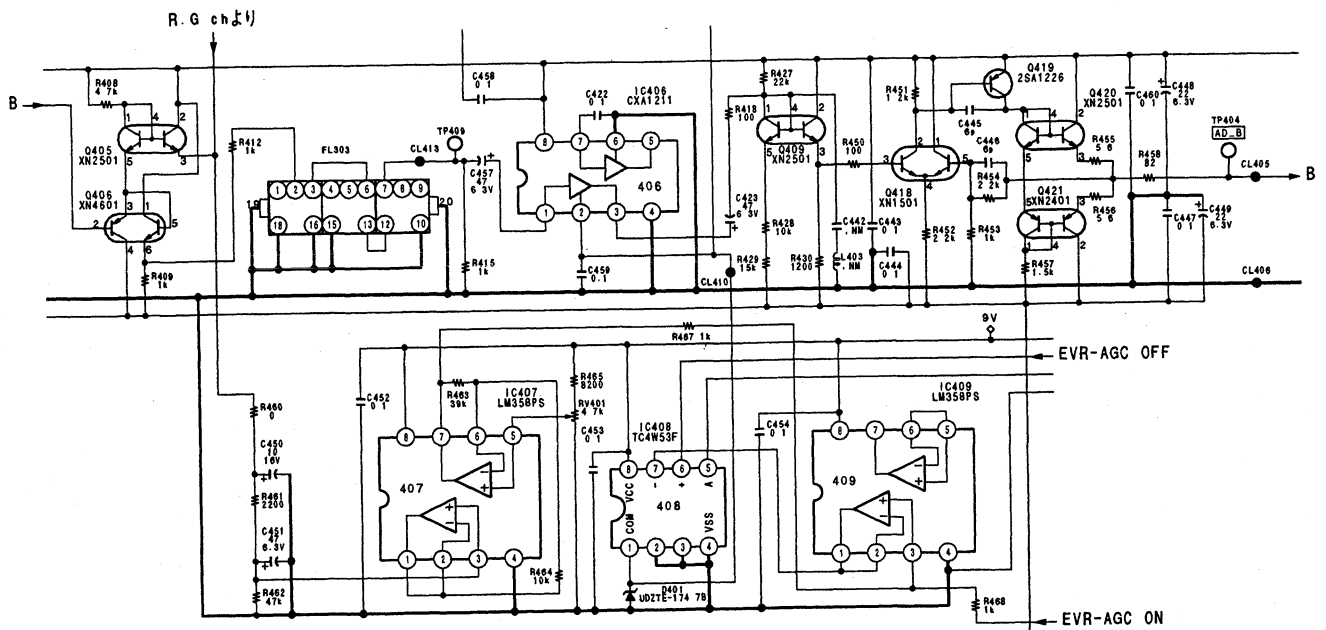


Fig. 1-6 Circuit Diagram of AGC Circuit

#### 14) Clamp pulse generator circuit

A clamp pulse is generated from the HD and BF output pulses of IC606. The two types of pulses are required for the following reason. The BF pulse is used when the input signal is selected as an RGB signal. No sync signal is usually added to the RGB signal. However, there is sometimes an RGB signal (e.g., SYNC ON G) to which a sync signal is added. In this case, the signal must be clamped in the burst flag position. An input signal is passed through IC301 for conversion into an RGB signal when it is a Y/C or video signal. The RGB output signal of IC301 is sliced in the sync signal portion. However, the system malfunctions when the signal is clamped in the BF position because the burst signal is demodulated. Therefore, the signal must be clamped in the former sync position, that is, the HD position. For the reason described above, the phase of a clamp pulse is selected by an input signal.

The HD and BF signals output from IC606 are sent to IC605 and selected by an input signal. The signals are then sent to IC603 and selected as an AFC HD signal according to the existence of an input signal to prevent that a negative potential is applied to the A/D converter. The signals output from IC603 are sent to IC101 (monostable multivibrator) to produce a pulse of approximately 2  $\mu\text{sec}$  and fed for the AGC circuit and A/D converter.

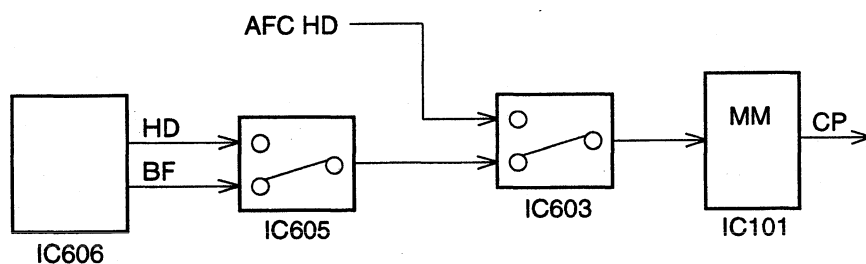


**Fig. 1-7 Clamp Pulse Generation Block**

## (2) Output signal processing block (Encoder circuit)

### 1) Character mixing block

Since the character mixing block in R, G, B channels has the same circuit configuration, only the R-channel block is described below. The R signal output from the FMY-21 board is input through Q809 (buffer) to IC802 (VCA). IC802 is adjusted by monitor R for user adjustment. The signal output from IC802 is input through base-grounded amplifiers (Q810 and Q811) and a buffer (Q812) to IC804.

A character signal is output from the SY-250 board and reduced in level by R827 and R828. The signal is then input through a buffer (Q813) to IC804. IC804 is a 3-channel video switch with pedestal clamp. IC804 operates when a clamp pulse is input to pin 10.

The video signal and character signal output from memory are mixed in IC804. A switching pulse is fed from the SY-250 board and input through IC803 (AND circuit) to IC804.

IC803 is used for masking of a character signal. The R signal output from IC804 is input through a buffer (Q817) to IC901 (encoder).

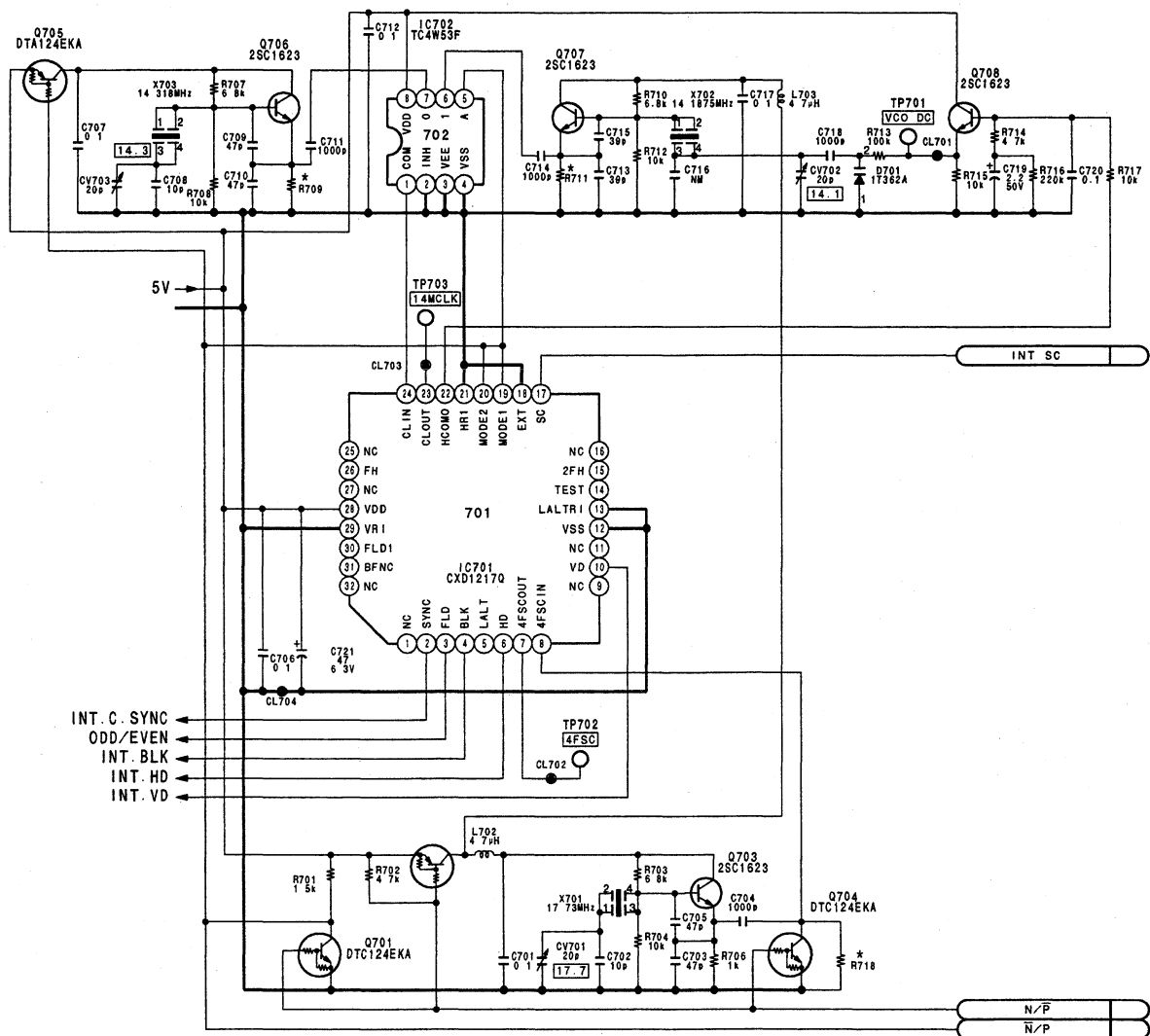


Fig. 1-8 Circuit Diagram of Internal Sync Generator

2) Subcarrier selection block for encoder

A subcarrier is required to convert (encode) an RGB signal into video and Y/C signals.

In this unit, the burst signal of a monitor output signal is synchronized with the input signal when an input signal is a video or Y/C color signal. In other cases, the internally generated subcarrier is used. This selection is performed by IC615. The input sync subcarrier output from pin 24 of IC608 is converted in waveforms and input to pin 6 of IC615. The internally generated subcarrier is output from pin 17 of IC701 (sync generator) and input to pin 7 of IC615. The subcarrier selected by IC615 is output from pin 1 and input through a low-pass filter (consisting of Q608 and Q609) to pin 6 of IC901.

3) Encoder block (IC901)

IC901 internally processes each signal and outputs video and Y/C signals by inputting an RGB signal, subcarrier (SC), and CSYNC signal. IC901 is compatible with both NTSC and PAL systems. However, the value of a resistor connected to pin 16 must be changed when each system is set. This selection is performed by Q902.

4) Sync generator block (IC701)

When the monitor output is in the MEMORY mode, a monitor output signal is generated using various sync signals that IC701 generates. IC701 generates CSYNC, HD, VD, VF, and SC signals by inputting a clock from the external block. The power of a circuit block is turned on or off using transistors (Q702 and Q705) when the NTSC and PAL modes of the peripheral circuit are selected. In the NTSC mode, IC701 operates when oscillator circuit X703 is turned on. In the PAL mode, IC701 operates when oscillator circuits X701 and X702 are turned on.

Q708 is a voltage-controlled crystal oscillator (VCXO). Q708 sends the error voltage output from pin 22 of IC701 to a variable capacitor (D701) via a low-pass filter. An oscillating frequency is changed to constitute a PLL circuit by changing the load capacity of X702.

#### 4-3-4. FMY-21 Board (A/D and D/A converters)

##### 1) A/D converter block

The A/D converter block mainly consists of three A/D converters (IC1001 to IC1003, CXD1176Q).

The analog RGB signal input in approximately 2.0 Vp-p from the VA-181 board is received using a buffer and converted into an eight-bit digital signal using an A/D converter.

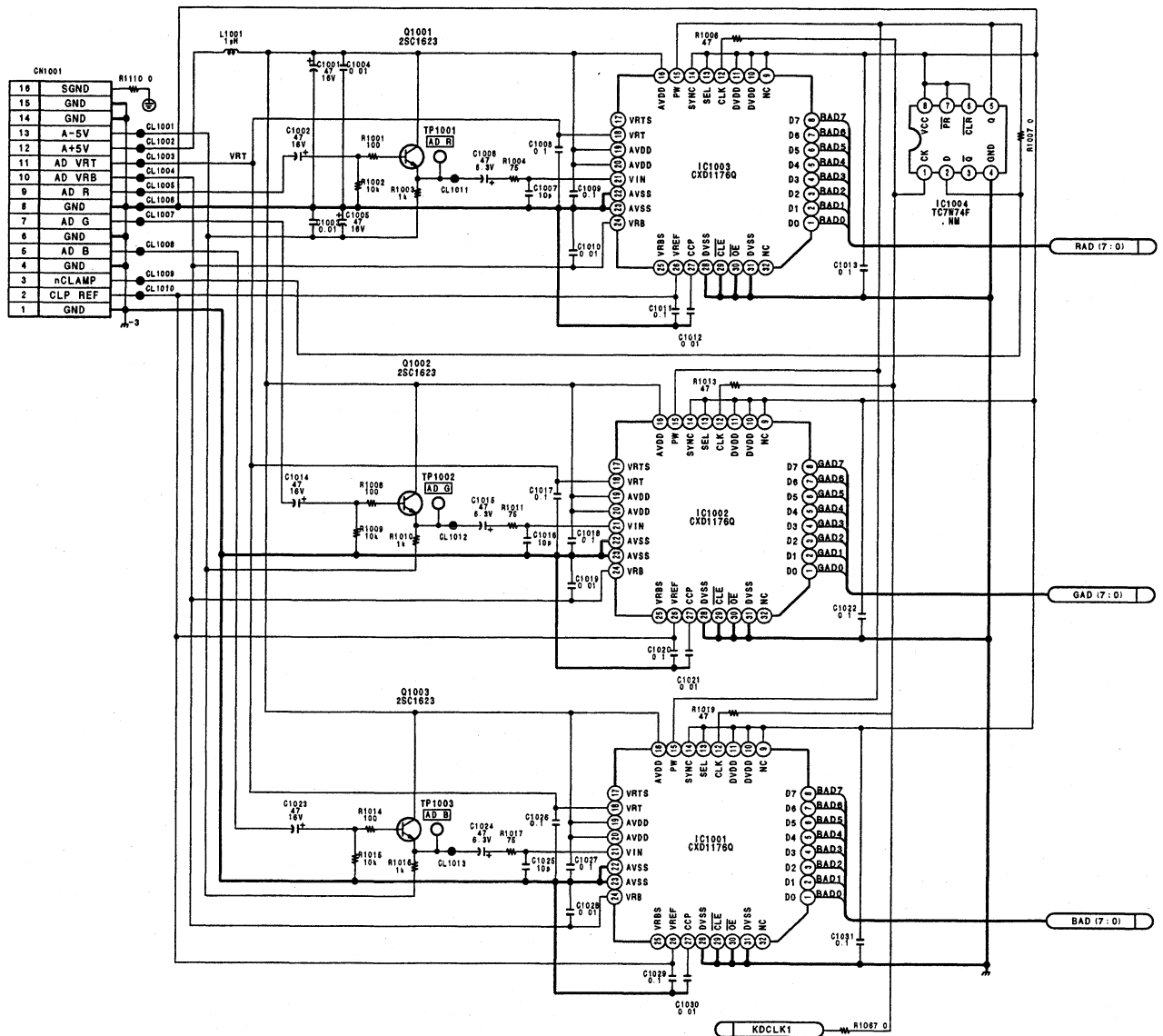


Fig. 1-9 Circuit Diagram of A/D Converter

## 2) D/A converter block

The D/A converter block consists of a three-channel D/A converter (IC1005, CXD1178Q) and buffer.

Each eight-bit digital RGB signal is converted into an analog RGB signal using a D/A converter. At that time, the voltage selected by the half-tone ON/OFF signal from the SY-250 board is sent to the V REF terminal of the D/A converter so as to produce a half-tone video signal on the menu screen. Lastly, the signal is output through a buffer to the VA-181 board in approximately 2.0 Vp-p.

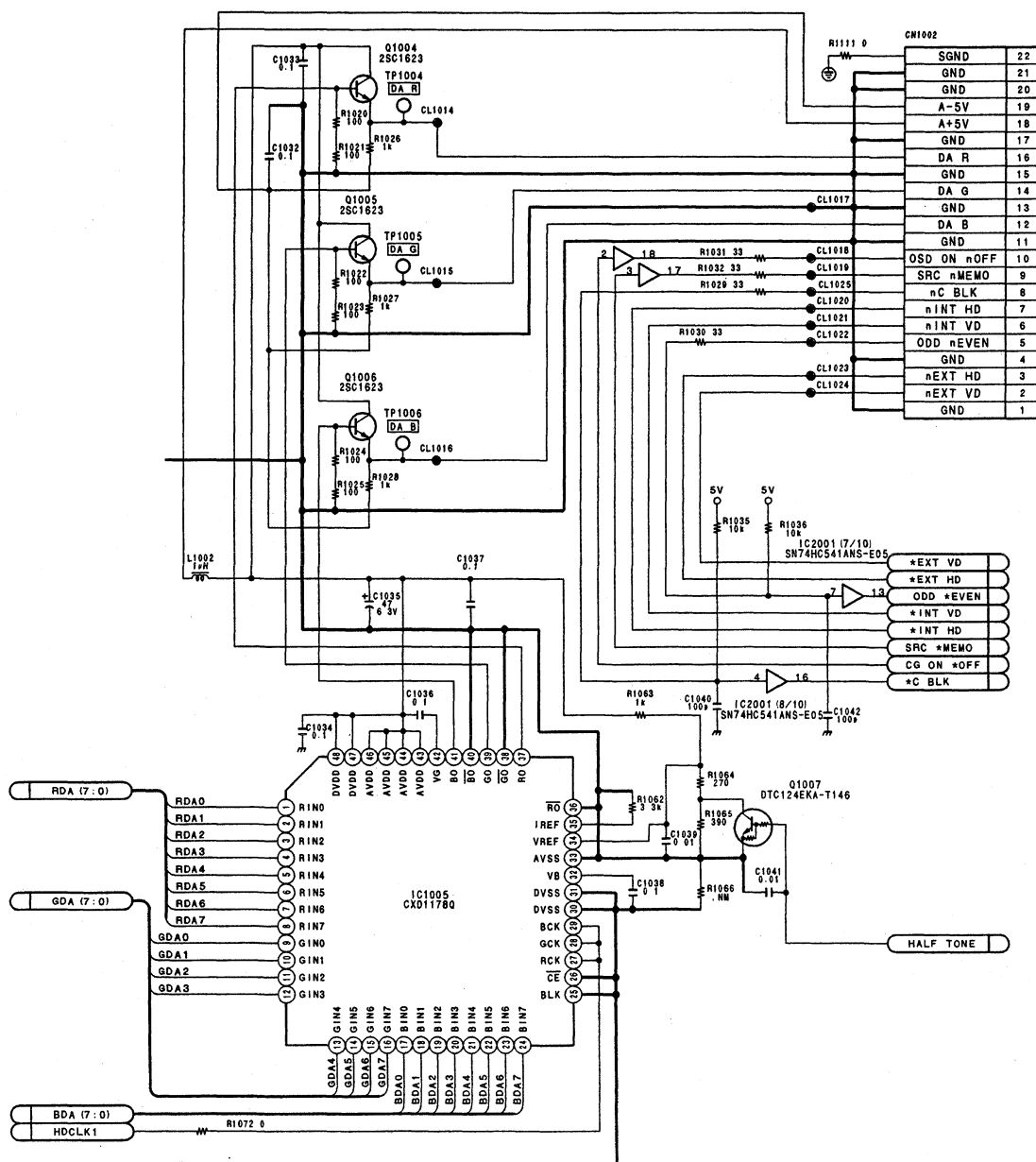


Fig. 1-10 Circuit Diagram of D/A Converter



## 4-4. PRINT CONTROL SECTION (PRT-11 BOARD)

### Outline

PRT-11 board is consisted of mechanism control block and head control block.

The mechanism control block is composed following circuits.

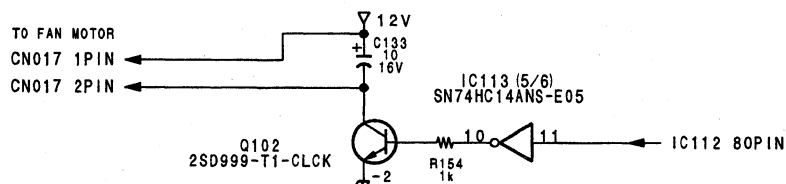
- Fan motor drive circuit
- Ribbon motor drive circuit
- Paper supply motor drive circuit
- Head motor drive circuit
- Tray motor drive circuit
- Platen motor drive circuit
- Various kinds sensor detection circuit
- ( Paper ejection motor drive circuit )

The head control block is composed following sections.

- $\gamma$  correction ROM(IC206)
- PQC IC(IC207)
- Head control IC(IC208)
- Number lines correction IC(IC210)

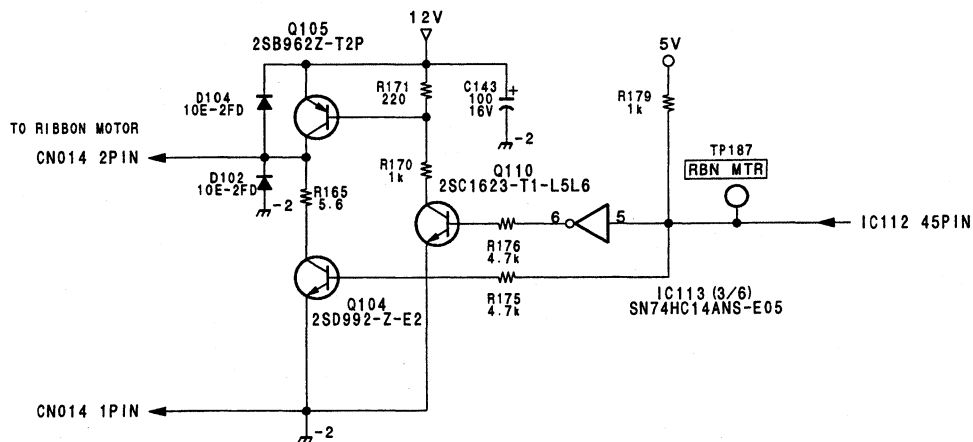
### 4-4-1. Fan motor drive circuit

Fan motor is driven by the control signal from pin 80 of IC112(CPU). When the temperature of thermal head is higher than the certain value in the printing or stand-by mode, this signal is set to the "LOW", the fan motor is rotated.



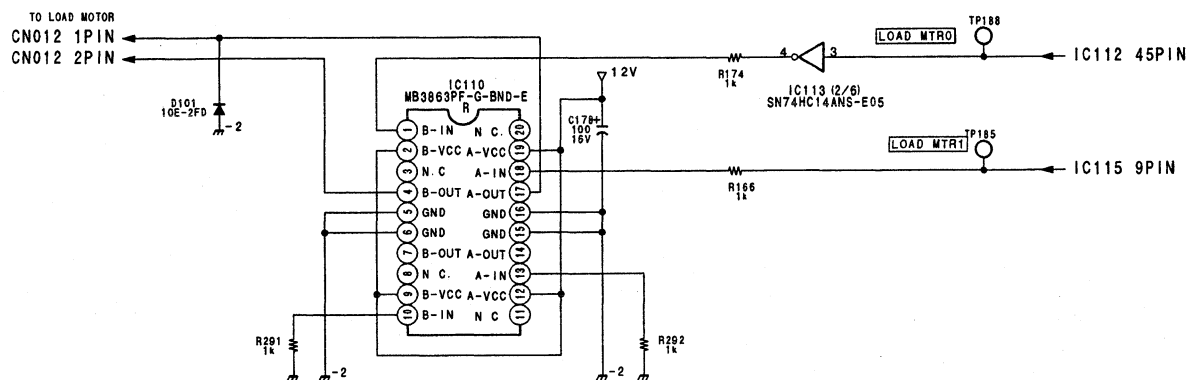
#### 4-4-2. Ribbon motor drive circuit

**The ribbon motor is driven with PWM by the control signal (active L) from the pin 45 of IC112.**



#### 4-4-3. Paper supply motor drive circuit

The paper supply motor is driven with PWM by (active L) from pin 46 of IC112(CPU) and pin 9 of IC115 (parallel port).



#### 4-4-4. Head motor and tray motor drive circuit

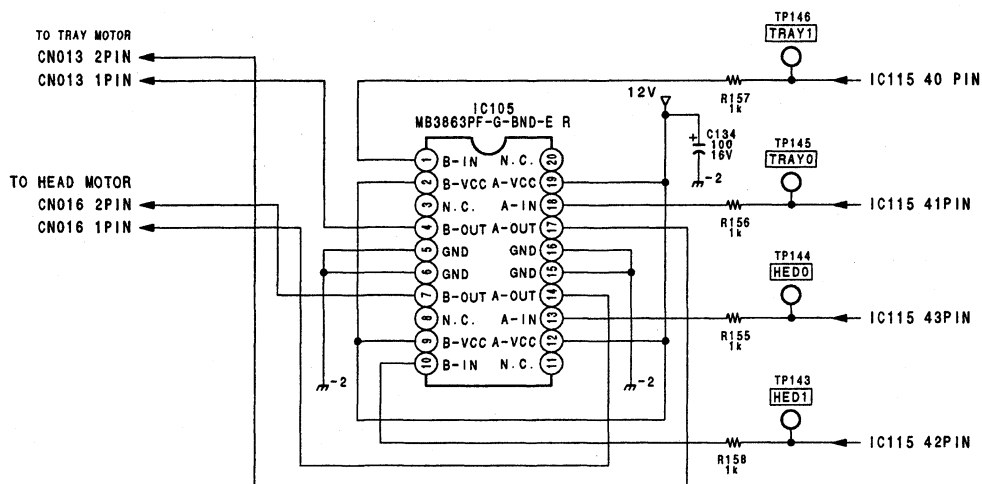
The control signal from  $\left\{ \begin{array}{l} \text{pins 42 and 43 of IC115 (parallel port) head motor} \\ \text{pins 40 and 41 of IC115 (parallel port) tray motor} \end{array} \right.$

is entered to  $\left\{ \begin{array}{l} \text{the pins 10 and 13 of IC105 head motor.} \\ \text{pins 1 and 18 of IC105 tray motor.} \end{array} \right.$

The motor is driven by the voltage from  $\begin{cases} \text{pins 7 and 14 head motor.} \\ \text{pins 4 and 17 tray motor.} \end{cases}$

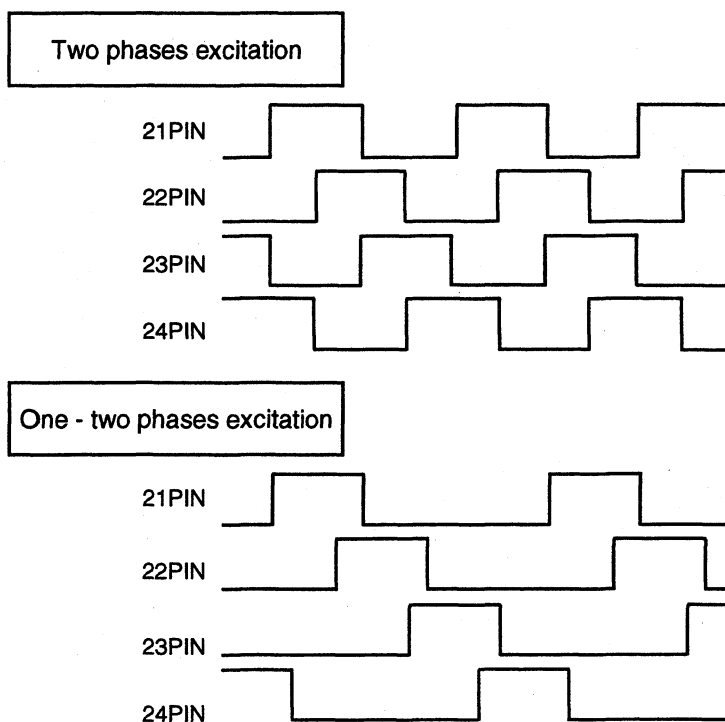
The up and down brakes are performed with following assemblies.

|        | Pins 40 and 42 of IC115 | Pins 41 and 43 of IC115 |
|--------|-------------------------|-------------------------|
| Up     | H                       | L                       |
| Down   | L                       | H                       |
| Brakes | H                       | H                       |
| Others | L                       | L                       |



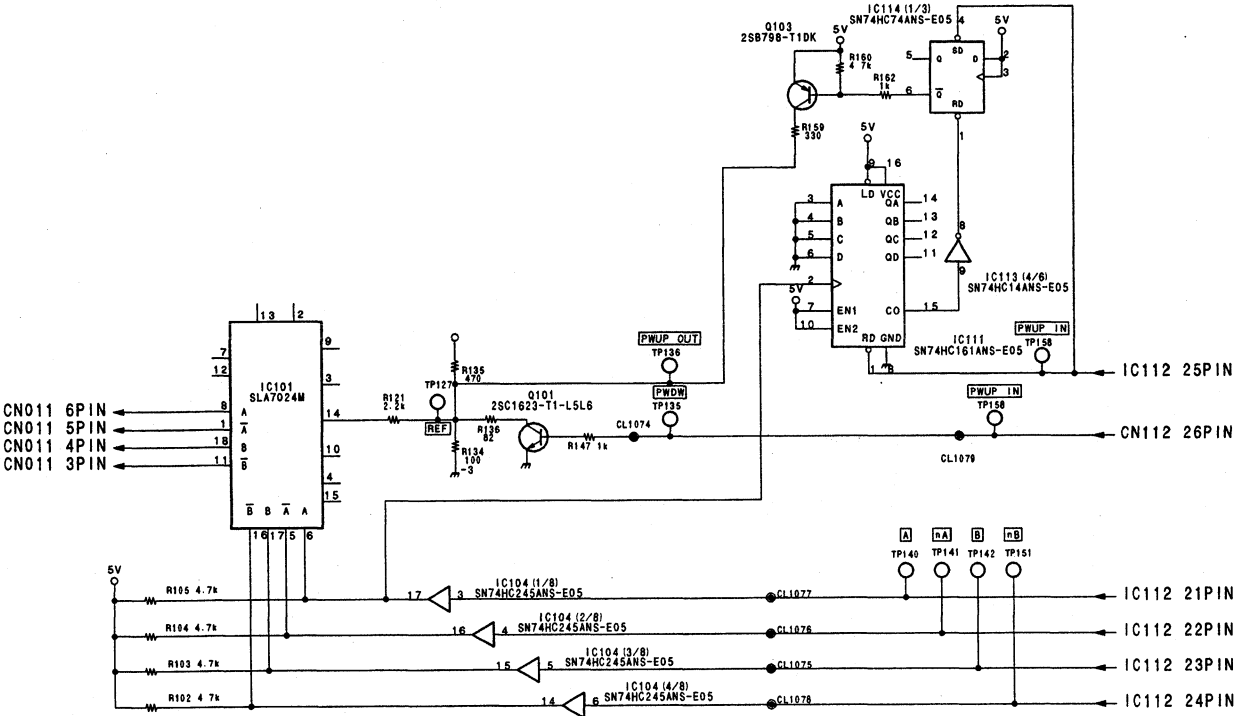
#### 4-4-5. Platen motor drive circuit

The platen is driven by stepping motor via the belt. There are two stepping motor excitation system, two phases and one- two phases. Each phase(A, A, B, B) control signal is outputted from pins 21 through 24 of IC112(CPU). The control signal is inputted to the pins 6, 5, 17 and 16 of IC101 as active L via the buffer IC104. The stepping motor is driven by chopper driving.



The output current value of IC101 is changed by control signal of pins 25 and 26 of IC112(CPU) and the torque of the stepping motor is changed.

|            | pin 25 of IC112 | pin 26 of IC112 | output current value |
|------------|-----------------|-----------------|----------------------|
| normal     | H               | L               | 530 mA               |
| power up   | L               | L               | 840 mA               |
| power down | H               | H               | 270 mA               |



#### 4-4-6. Various kinds sensor detection circuit

|                        |                            |
|------------------------|----------------------------|
| Platen position sensor | Paper sensor               |
| Platen cover sensor    | Paper supply timing sensor |
| Head position sensor   | Eject paper timing sensor  |
| Ribbon cassette sensor | Tray position sensor       |
| Paper jamming sensor   | Paper ejector sensor       |
| Ribbon code sensor     | Ribbon FG sensor           |
| Bar code sensor        | Paper supply FG sensor     |
| Paper size sensor      |                            |

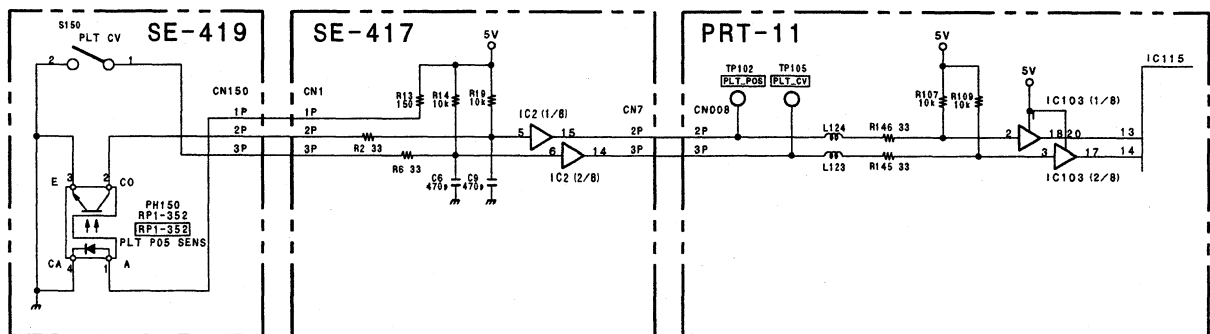
The following sensors are performed A/D conversion.

- Ribbon code sensor
- Paper jamming sensor
- Bar code sensor

These threshold levels are successively changed. The threshold level is fetched from E<sup>2</sup>PROM when the power is turned ON. After print is ended and the bar code is read, suitable setting value is calculated and is written in the E<sup>2</sup>PROM.

( The level can be ensured in the mechanical tool mode.)

- 1) Platen position sensor
  - Route : SE-419 to SE-417 to PRT-11
  - TP : PRT-11 board TP105
  - Function : Home position distinction of platen
  - Level : H Home position
  - L Except home position
- 2) Platen cover sensor
  - Route : SE-419 to SE-417 to PRT-11
  - TP : PRT-11 board TP105
  - Function : Distinction whether platen cover is opened or not
  - Level : H Cover is opened.
  - L Cover is closed.



### 3) Head position sensor

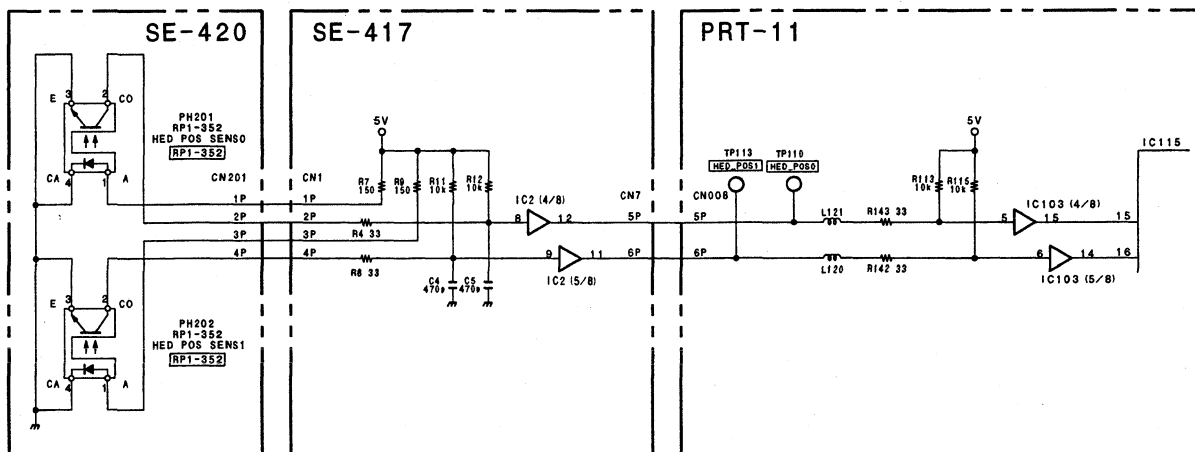
Route : SE-420 to SE-417 to PRT-11

TP : PRT-11 board TP110(HED\_POS 0),TP113(HED\_POS 1)

Function : Distinction of thermal head position

Level :

|                | HED_POS 0 | HED_POS 1 |
|----------------|-----------|-----------|
| Indefinite     | H         | H         |
| FF1 position   | H → L     | H         |
| FF2 position   | L → H     | H         |
| Print position | H         | L         |
| Home position  | L         | L         |



### 4) Ribbon cassette sensor

Route : Microswitch to SE-417 to PRT-11

TP : PRT-11 board TP108

Function : Distinction whether the ribbon cassette is inserted into the unit or not.

Level : H The ribbon cassette is not inserted.

: L The ribbon cassette is inserted.



# 7) Ribbon code sensor(PHTR)

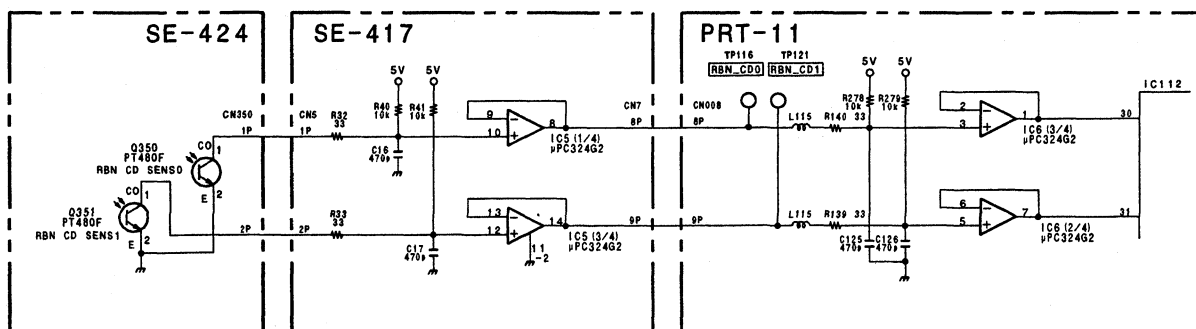
Route : SE-424 to SE-417 to PRT-11

TP : PRT-11 board TP118(RBN\_CD 0),TP121(RBN\_CD 1)

Function : Distinction of start, end and beginning code detection marks of ribbon.  
(Photo transistor)

Level :

|                                         | RBN_CD 0 | RBN_CD 1 |
|-----------------------------------------|----------|----------|
| Ribbon end                              | H        | H        |
| Beginning detection of YELLOW           | L        | H        |
| Beginning detection of MAGENTA and CYAN | H        | L        |
| Others                                  | L        | L        |



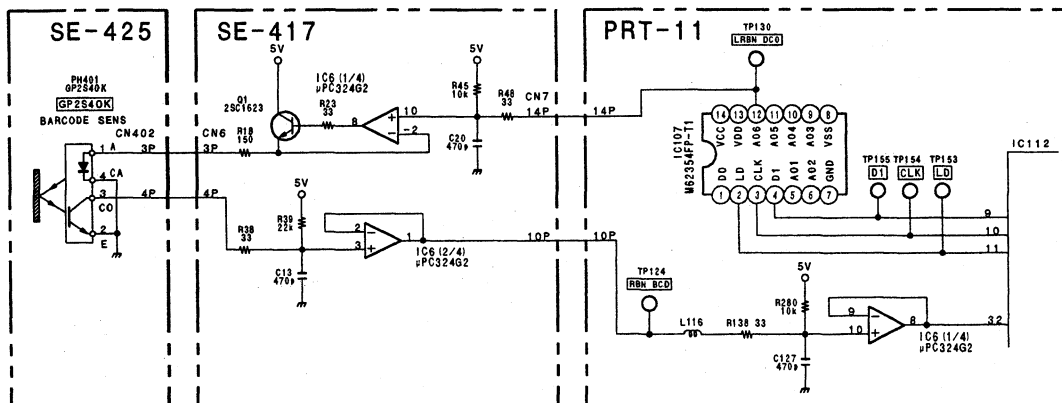
# 8) Bar code sensor

Route : SE-425 to SE-417 to PRT-11

TP : PRT-11 board TP124

Function : Detection of bar code ring that is distinguished the kind of ribbons.

Level : Rectangle waveform output





9) Paper size sensor

Route : SE-426 to SE-418 to PRT-11

TP : PRT-11 board TP115

Function : Distinction whether paper set is print paper or post card or not.

Level : H Post card, paper for laminate  
L Standard, paper for sticker

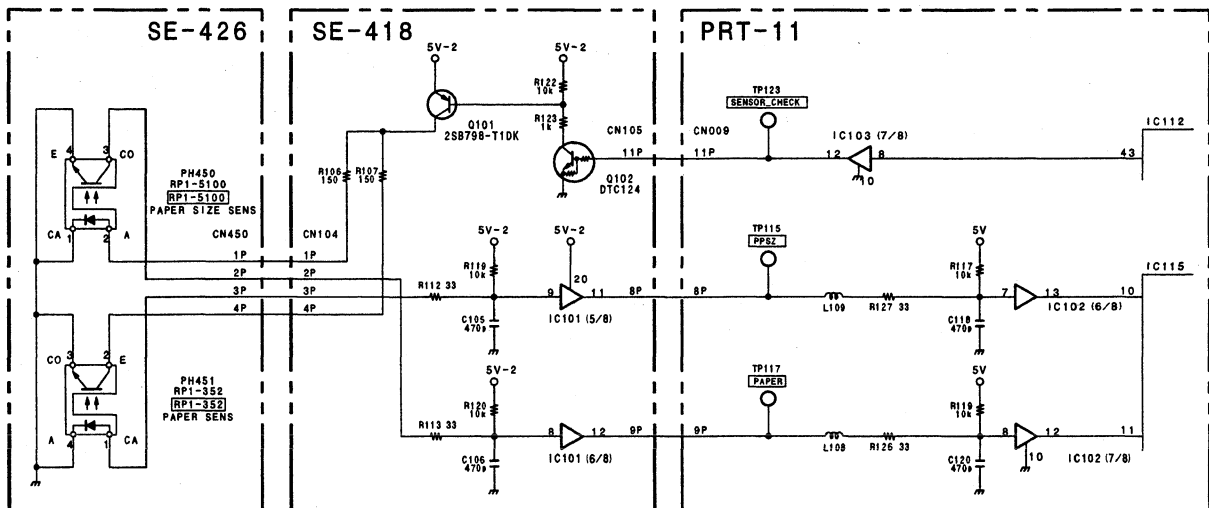
10) Paper sensor

Route : SE-426 to SE-418 to PRT-11

TP : PRT-11 board TP117

Function : Distinction whether paper supply tray or the print paper is set or not.

Level : H The print paper is set, or the paper supply tray is set and there is not print paper.  
L There is not print paper, the paper supply tray is not set.



11) Paper supply timing sensor

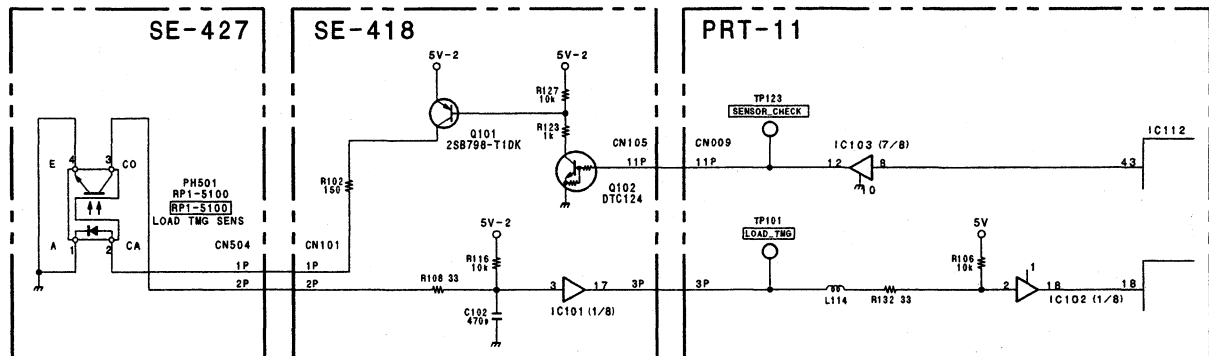
Route : SE-427 to SE-418 to PRT-11

TP : PRT-11 board TP101

Function : Distinction whether print paper is correctly supplied or not.

Distinction whether print paper is jammed at paper supply entrance during the stand-by mode.

Level : H There is a print paper at paper supply entrance.  
L There is not print paper at paper supply entrance.



## 12) Eject paper timing sensor

Route : SE-428 to SE-418 to PRT-11

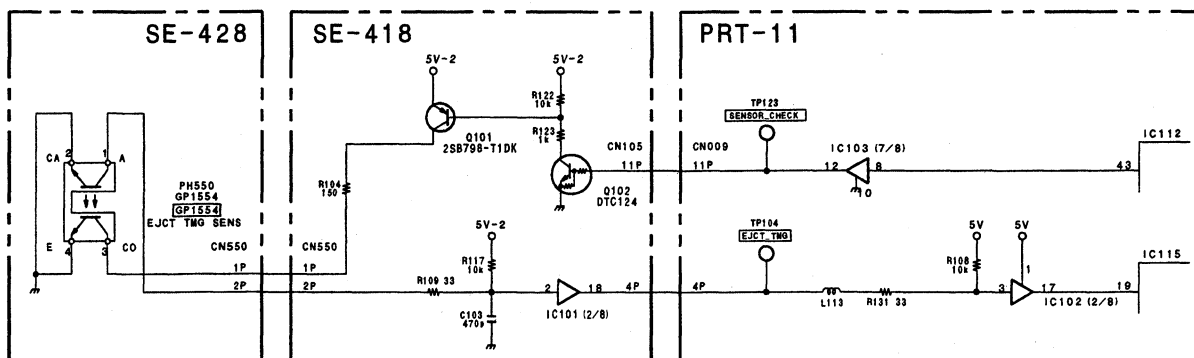
TP : PRT-11 board TP104

Function : Mechanical timing distinction of during eject paper operation

Distinction whether the print paper is jammed at eject paper exit or not.

Level : H There is a print paper at delivery paper exit.

L There is not print paper at delivery paper exit.



## 13) Tray position sensor

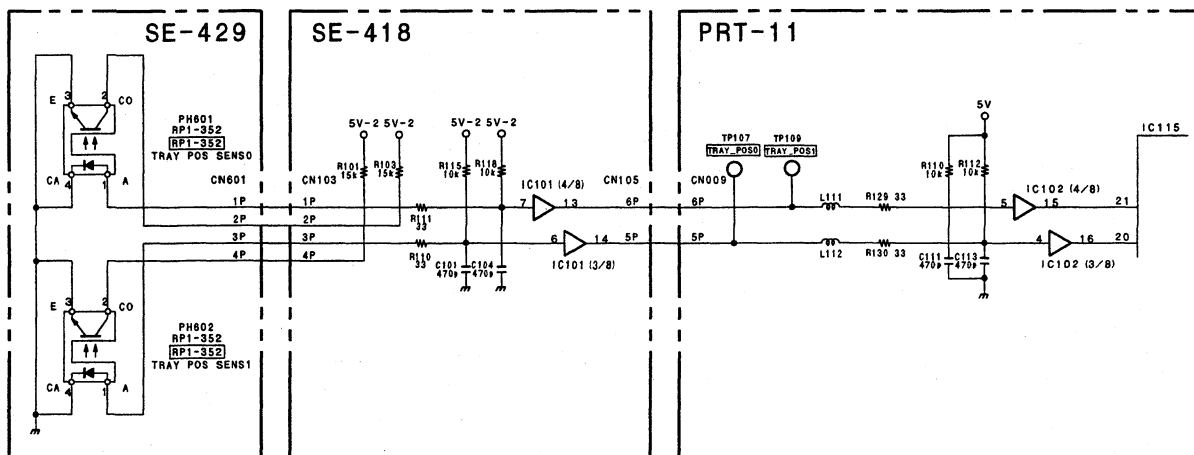
Route : SE-429 to SE-418 to PRT-11

TP : PRT-11 board TP107(TRAY\_POS 0), TP109(TRAY\_POS 1)

Function : Distinction of paper supply arm and eject paper arm positions

Level :

|                       | TRAY_POS 0 | TRAY_POS 1 |
|-----------------------|------------|------------|
| Others                | H          | H          |
| Paper supply position | L          | H          |
| Eject paper position  | H          | L          |
| Home position         | L          | L          |



#### 14) Paper ejector sensor

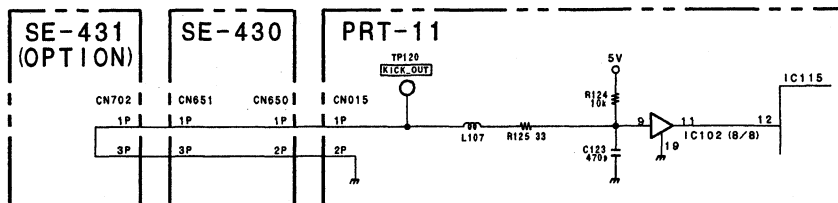
Route : PRT-11

TP : PRT-11 board TP120

Function : Distinction whether the paper ejector(option) is inserted or not.

Level : H The paper ejector is not set.

L The paper ejector is set.



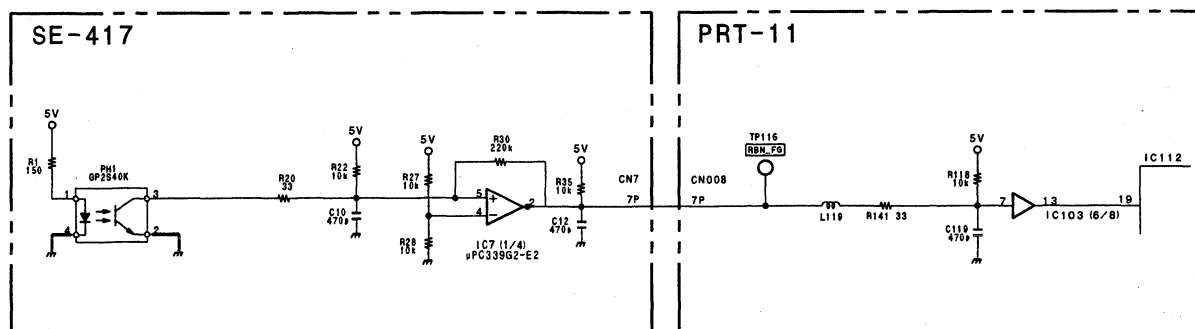
#### 15) Ribbon FG sensor

Route : SE-417 to PRT-11

TP : PRT-11 board TP116

Function : Rotation number of ribbon take-up side is detected.

Level : Rectangle waveform output



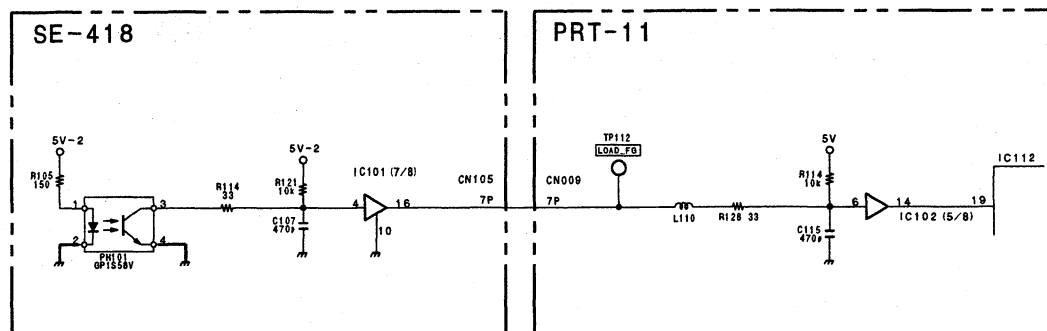
#### 16) Loading paper FG sensor

Route : SE-418 to PRT-11

TP : PRT-11 board TP112

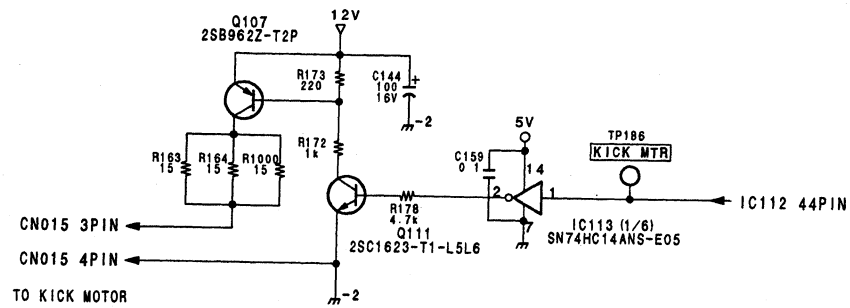
Function : Detection of print paper sending quantity between position paper supply timing sensor and platen chuck and sampling FG of bar code ring.

Level : Rectangle waveform output



#### 4-4-7. Paper ejector motor drive circuit

The motor of paper ejector is driven by control signal from pin 44 of IC112 (CPU). It is only driven at eject paper time.



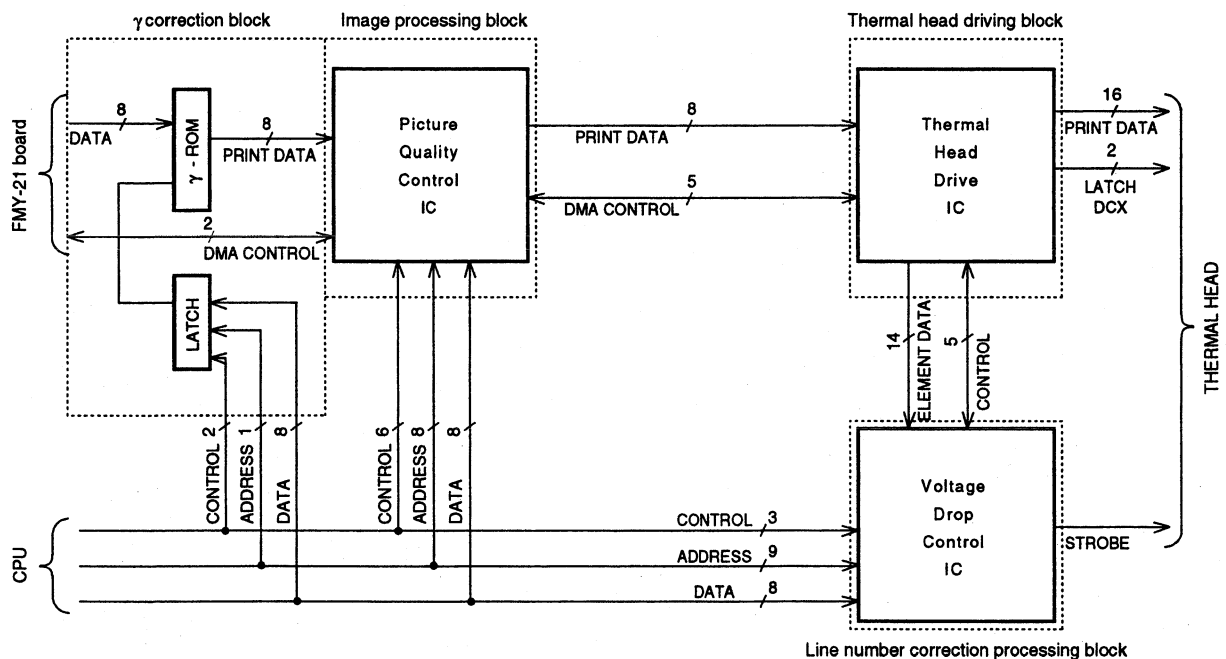
## Head control block

The head control block adds the signal process that are various corrections to everyone line parallel print data from FMY-21 board and sends it to thermal head to print.

The head control block is composed following five sections.

- $\gamma$  ROM that corrects  $\gamma$  correction to the parallel print data from FMY-21 board.
- Image processing IC(Picture Quality Control IC) that processes pattern recognition interpolation, edge reinforcement, heat accumulation correction.
- Head driving IC that converts parallel data with PWM and sends print data to the thermal head.
- Line number correction IC(Voltage drop control IC) that corrects voltage drop by common resistor of the thermal head.
- The head voltage correction circuit

The print data is received from FMY-21 board as parallel data and corrected  $\gamma$  correction. Various signal processing are added by PQC IC. After that, PWM modulation is performed by head driving IC and is sent the print data to the thermal head.



**[Each Block]**

**$\gamma$  Correction circuit**

The print data from FMY-21 board is  $\gamma$  corrected by the data conversion table of  $\gamma$  ROM. The address of  $\gamma$  ROM is allotted as follows, YMC each color switching at two bits, temperature compensation of thermal head at four bits, kinds and sending of the ribbon at four bits.  $\gamma$  data is switched according to the switch signal from CPU(IC112).

**PQC IC**

**Edge reinforcement process**

To improve definition of the image, edge reinforcement is performed by using digital filter of horizontal and vertical.

**Heat accumulation correction processing**

Dull of rising and dull cutting from bad head temperature response are corrected by the digital filter.

**Head driving IC**

**PWM modulation processing**

Eight bits parallel data is modulated with PWM and is converted serial print data.

**Separation print processing**

If the print dot area of low density image portion becomes small, clearance between print lines are appeared. As this countermeasure, one step gradation is divided by four and prints.

**Line number correction IC**

If exothermic resistor element connected the thermal head is increased, composition resistor of element becomes small. Voltage drop by common resistor of harness etc. can not be disregard. The print density becomes low. As this countermeasure, the time turning on electricity to the head element is controlled, print density is corrected.

**Head voltage correction**

Head voltage can be increased or decreased by changing VCONT signal. Following corrections are performed by using A/D port output of CPU(IC112). V CONT signal is controlled digitally by software.

**Correction by sending pitch**

When printing with same head voltage, the sending pitch is narrower, print is higher density. Each sending of usual horizontal print(FULL, four separation, sixteen separation) and vertical print(two separation, IPP) are added the offset.

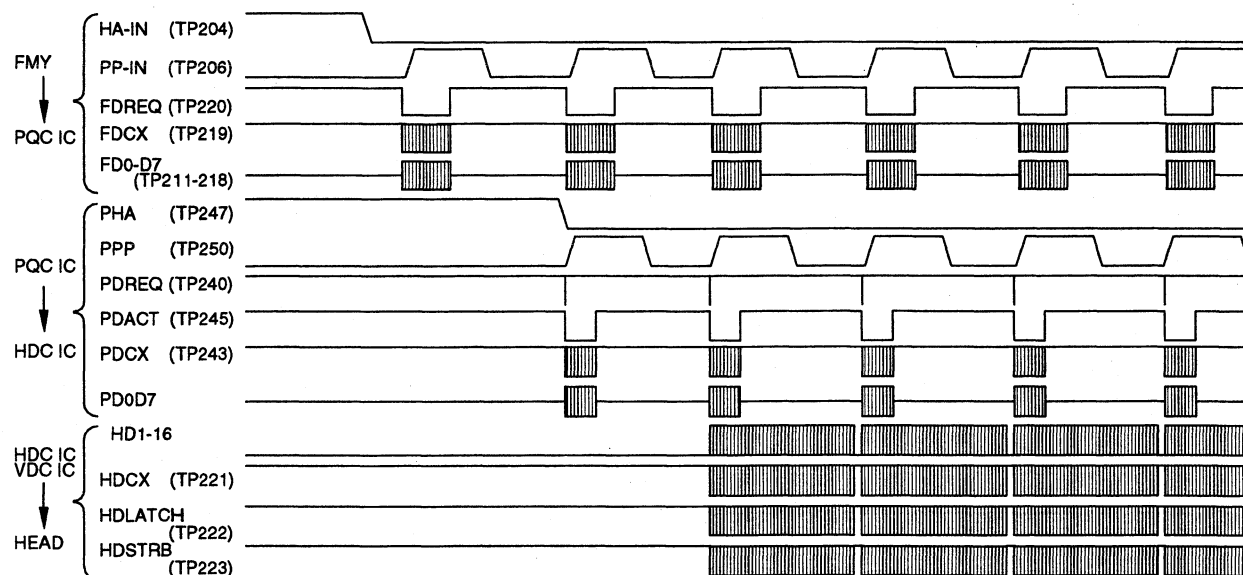
**Correction of thermal head temperature.**

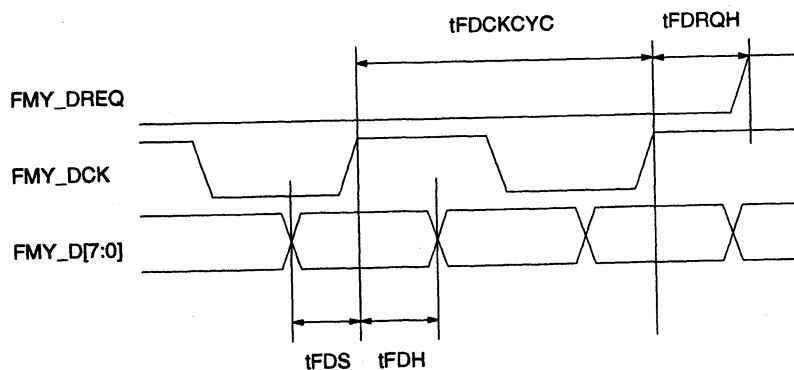
When printing with same head voltage, there is difference between print density by high or low of head temperature. Therefore, the head voltage is increased or decreased by head temperature just before printing.

### [Input and output timing]

nPRINTING signal and nHEAD\_ACTIVE\_IN signal, these are enable signal of thermal head. When both these signals are L, the thermal head becomes print possible mode. NHEAD\_ACTIVE\_IN(P) signal is in addition to enable signal of IC(IC207,208,210). When this signal is "L", the IC is print possible mode. In this mode, rising edge of PRINT\_PULSE\_IN signal is inputted to the PQC IC(IC207), nFMY\_DREQ signal that indicates print data receiving able condition that is outputted to the FMY-21 board, DMA transmission of first data is received. If the rising edge of next PRINT\_PULSE\_IN is inputted to the PQC IC, nHEAD\_ACTIVE\_P and nPRINT\_PULSE\_P signal are outputted to the next stage head drive IC(IC208), the first line data is processed the image, nPRINT\_DREQ signal from next stage head drive IC is waited for DMA transmission. The head driving IC(IC208) received the PRINT\_PULSE\_P signal from PQC IC(IC207) and outputted nPRINT\_DREQ signal. After that, eight bits print data of one line separation DMA transmission with synchronized PRINT\_DCK from PQC IC is received. Next PRINT\_PULSE\_P signal is inputted, therefore, as serial data of eight port, shift clock (HEAD\_CK), data latch output(HEAD\_LATCH) and strobe output(HEAD\_STRB) are also transmitted to the thermal head. Parallel with DMA transmission of second line data is also received.

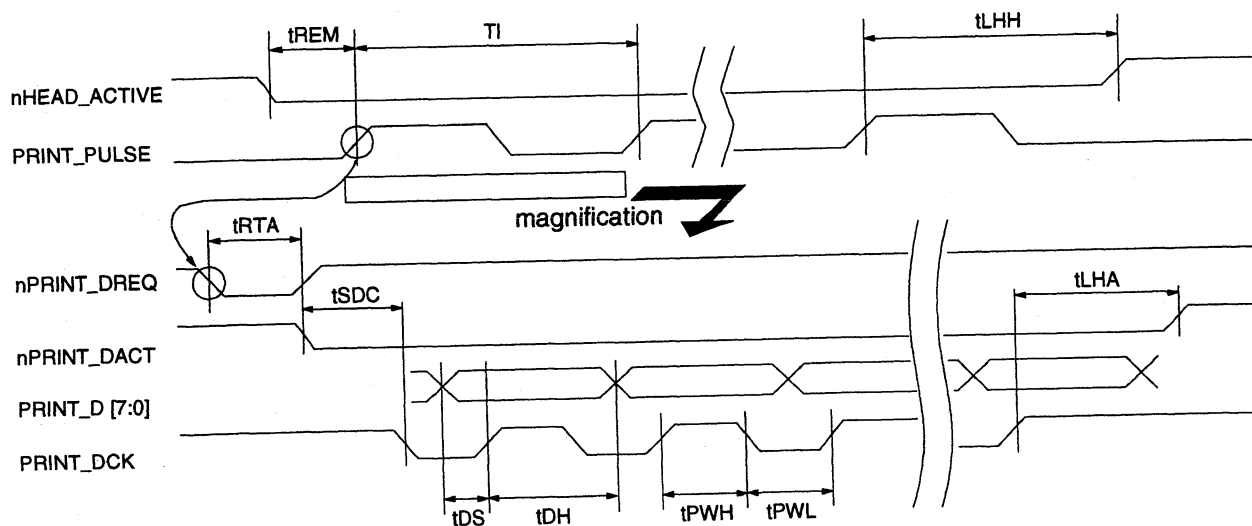
As described above, the first line data is synchronized to second PRINT\_PULSE\_IN signal and transmitted to head driving IC. It is transmitted to the thermal head with synchronized third PRINT\_PULSE\_IN signal. The PRINT\_PULSE\_IN signal is inputted to PQC IC with two more than truly print line number.





Input and output timing from FMY-21 to PQC IC

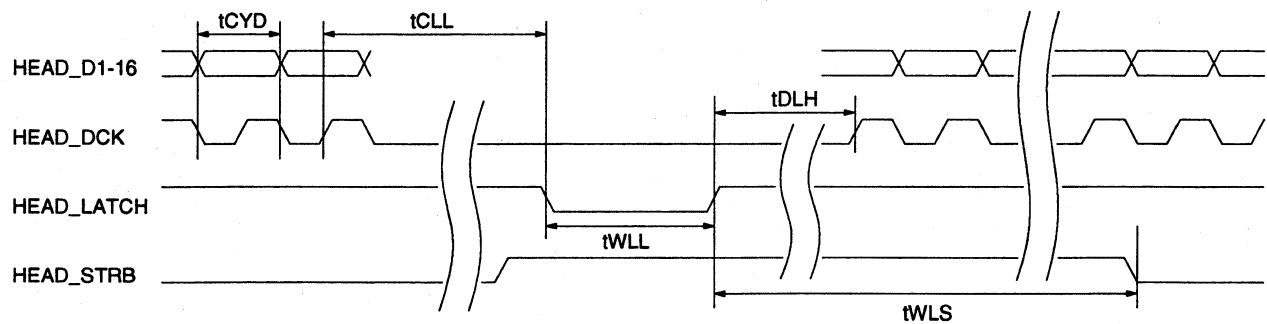
| Item                  | Code address | MIN | MAX | Unit |
|-----------------------|--------------|-----|-----|------|
| FMY DCK cycle time    | tFDCKCYC     | 400 | -   | ns   |
| FMY D data setup time | tFDS         | 15  | -   | ns   |
| FMY D data hold time  | tFDH         | 15  | -   | ns   |
| nFMY DREQ LOW TO HIGH | tFDRQH       | 20  | 45  | ns   |



Input and output timing from PQC IC to HDC IC

| Item                 | Code address | MIN  | MAX | Unit |
|----------------------|--------------|------|-----|------|
| nHA ↓ to PP ↑        | t REM        | 10   | -   | ns   |
| PP ↑ to nHA ↑        | t LHH        | 5.48 | -   | ns   |
| nDREQ ↓ to nDACK ↓   | t RTA        | 10   | -   | ns   |
| nDACK ↓ to DCK input | t SDC        | 0    | -   | ns   |
| Data setup time      | t DS         | 10   | -   | ns   |
| Data hold time       | t DH         | 10   | -   | ns   |
| DCK high level width | t PWH        | 200  | -   | ns   |
| DCK low level width  | t PWL        | 200  | -   | ns   |
| DCK ↑ to nDACK ↑     | t LHA        | 1.8  | -   | μs   |





Output timing of thermal head

| Item                                               | Code address | MIN    | Unit    |
|----------------------------------------------------|--------------|--------|---------|
| DATA 1 TO 8<br>HED_CLK cycle time                  | t CYD        | 150.87 | ns      |
| nHEDLATCH low level width                          | t WLL        | 452.61 | ns      |
| nHED LATCH $\uparrow$ to<br>HED_CLK $\uparrow$     | t DLH        | 528.04 | ns      |
| HED_CLK $\uparrow$ to<br>nHED_LATCH $\downarrow$   | t CLL        | 678.91 | ns      |
| nHED_LATCH $\uparrow$ to<br>nHED_STRB $\downarrow$ | t WLS        | 2.26   | $\mu$ s |

## SECTION 5 MECHANICAL DESCRIPTION

### 5-1. MECHANICAL OPERATION DESCRIPTION

This model is the dye transfer sublimation thermal printer that prints A6 size print paper (width direction). This is platen chuck method.

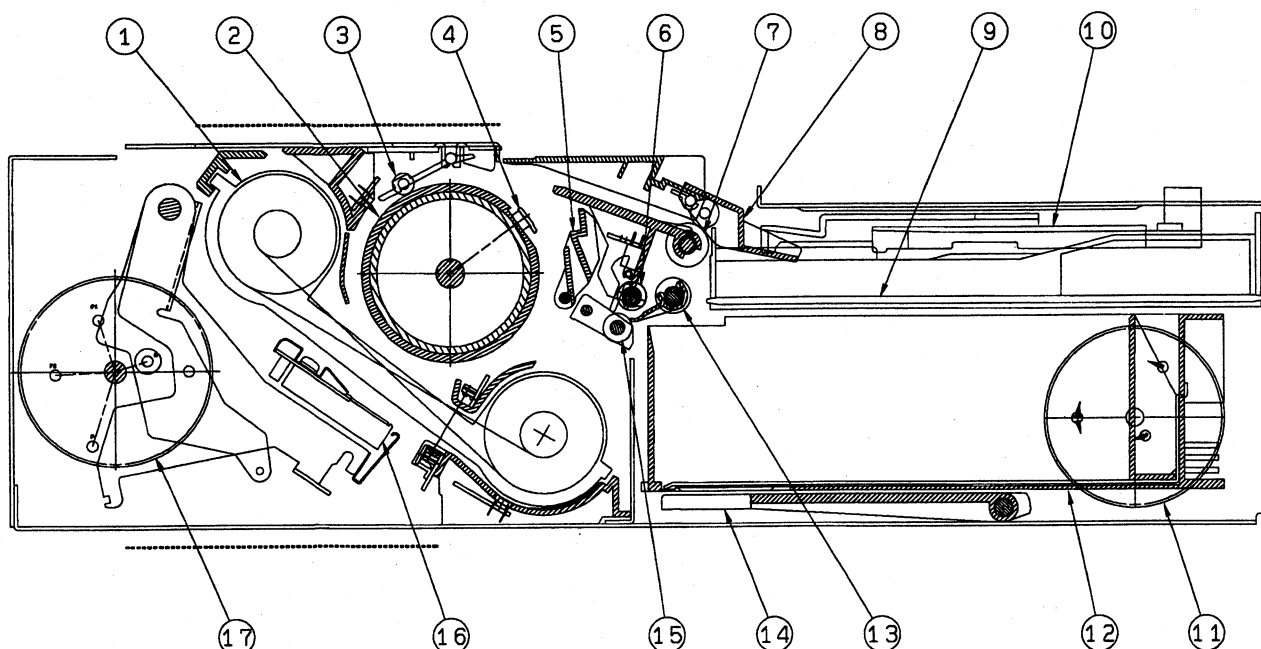


Fig. 5-1.

This model has little big size ribbon cartridge and paper supply tray because this model correspond to 200 images by color standard print paper and ribbon.

The top cover has the lid for a jamming. (The dot line portion of platen upper) Replacement of the thermal head is performed from bottom side of the unit. The bottom side has the lid. (The dot line portion of thermal head lower.)

There are postcard size paper supply tray and paper injector (one piece injection unit) as option.

#### Major parts layout

- |                      |                       |
|----------------------|-----------------------|
| ① Ribbon cartridge   | ② Platen              |
| ③ Paper hold roller  | ④ Chuck               |
| ⑤ Paper lead flap    | ⑥ Paper supply roller |
| ⑦ Paper eject roller | ⑧ Paper eject flap    |
| ⑨ Paper eject tray   | ⑩ Paper eject arm     |
| ⑪ Tray motor cam     | ⑫ Paper supply tray   |
| ⑬ Pick up roller     | ⑭ Paper supply arm    |
| ⑮ Separation roller  | ⑯ Thermal head        |
| ⑰ System cam         |                       |

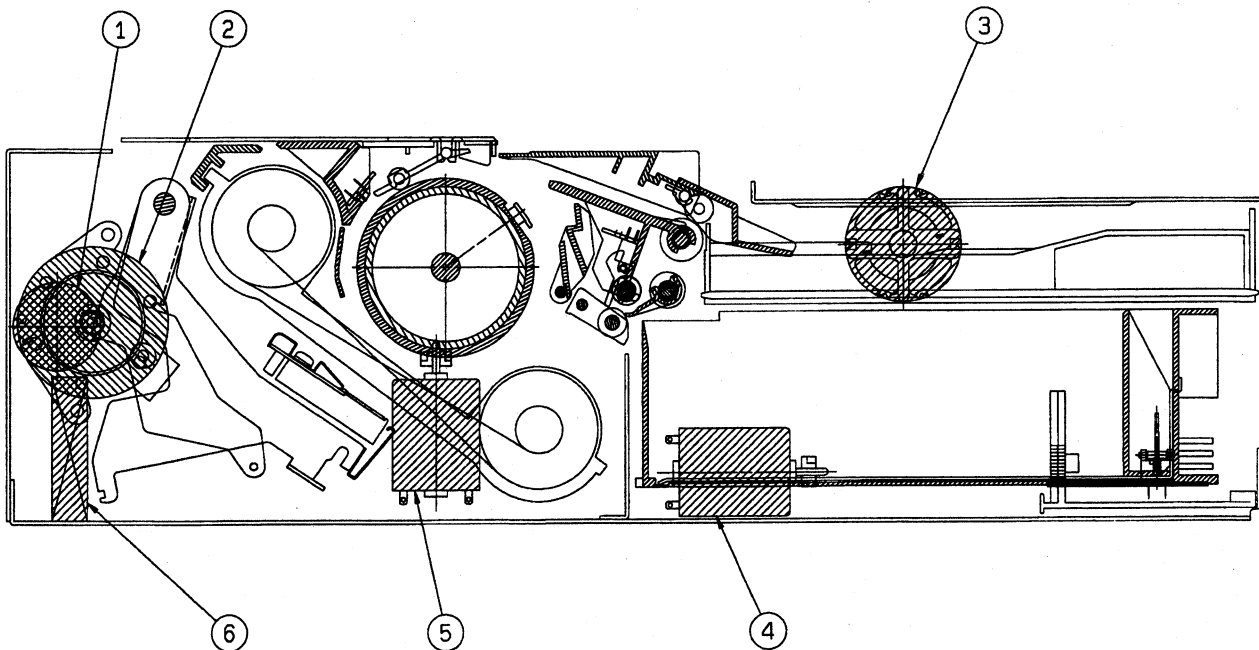


Fig. 5-2.

This unit has five drive motors. There is a fan motor for cooling the thermal head. There are two fan motor for cooling the switching regulator at the chassis.

- ① Head motor (DC motor)( correctly rotation /reversely rotation)
  - Head up/down drive
  - BC link stop
  - Platen chuck link drive
- ② Platen motor (stepping motor) ( correctly rotation /reversely rotation)
  - Platen drive
  - Chuck open and shut (linked with rotation of platen)
- ③ Paper supply motor (DC motor) ( correctly rotation /reversely rotation)
  - Pick up roller drive
  - Paper supply roller /separation roller drive
  - paper eject roller drive
  - BC gear drive
- ④ Tray motor (DC motor) ( correctly rotation /reversely rotation)
  - Separation roller position move
  - Paper lead flap drive
  - Paper supply arm drive
  - Paper eject arm drive
- ⑤ Ribbon motor (DC motor) ( correctly rotation only)
  - Ribbon rewinding
- ⑥ Fan motor(DC motor) ( correctly rotation only, for letting the air)
  - Thermal head cooling when printing and over heating.

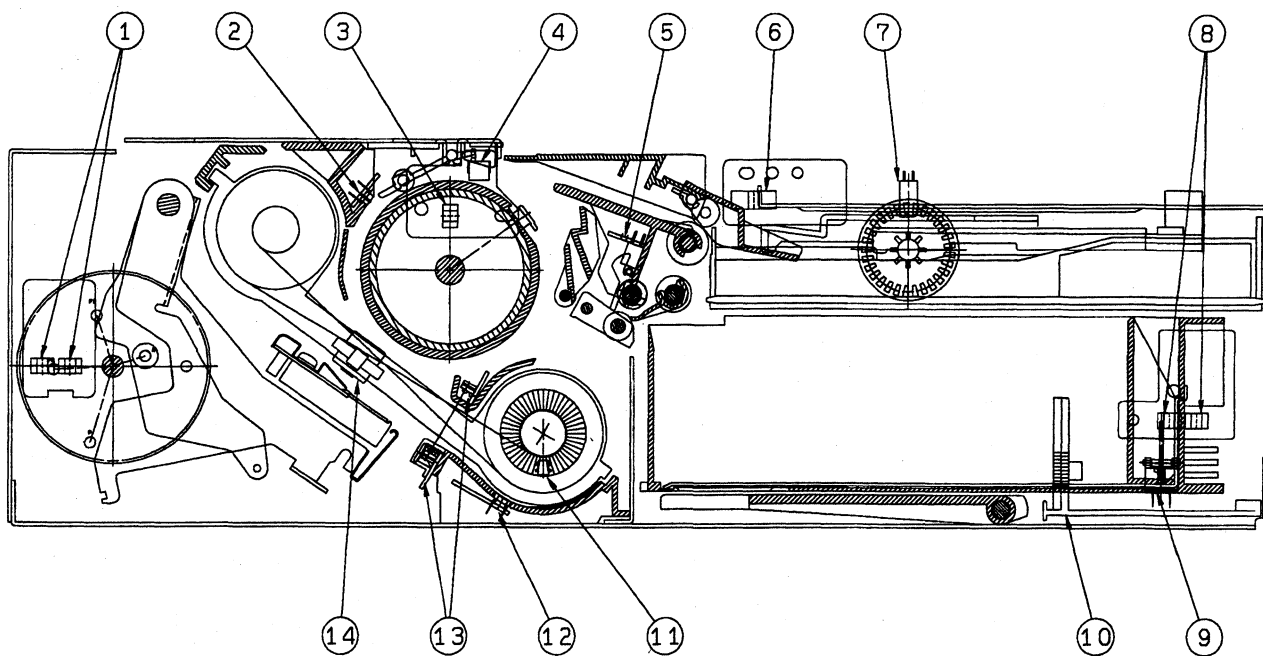


Fig. 5-3.

The sensor names and methods are as follows.

| No | Name                      | type                                        | method                                   |
|----|---------------------------|---------------------------------------------|------------------------------------------|
| 1  | Head position sensor      | Transparency ×2<br>Photo interrupter        | Detection of head position               |
| 2  | Paper jamming sensor      | Reflection<br>Photo interrupter             | Detection of paper jamming               |
| 3  | Platen position sensor    | Transparency<br>Photo interrupter           | Detection of platen home position        |
| 4  | Platen cover sensor       | Microswitch                                 | Open and shut judge of cover             |
| 5  | Paper edge sensor         | Transparency<br>Photo interrupter with arm  | Detection of paper edge                  |
| 6  | Paper eject timing sensor | Transparency<br>Photo interrupter           | Detection of delivery paper miss         |
| 7  | Paper supply FG sensor    | Transparency<br>Photo interrupter           | Detection of paper sending quantity      |
| 8  | Tray position sensor      | Transparency ×2<br>Photo interrupter        | Detection of tray motor cam position     |
| 9  | Tray size sensor          | Transparency<br>Photo interrupter with arm  | Detection of tray size                   |
| 10 | Paper yes or no sensor    | Transparency<br>Arm and photo interrupter   | Yes or no judge of paper                 |
| 11 | Ribbon FG sensor          | Reflection<br>Photo interrupter             | Judge of ribbon rewinding                |
| 12 | Bar code sensor           | Reflection<br>Photo interrupter             | Type judge of ribbon cartridge           |
| 13 | Ribbon code sensor        | Transparency ×2<br>LED and photo transistor | beginning detection of ribbon each color |
| 14 | Ribbon cartridge sensor   | Microswitch<br>Push catch one type          | yes or no judge of ribbon cartridge      |

Table 5-1.

## 5-2. PRINTING OPERATION DESCRIPTION

Printing operation is switched at four position by system cam and is performed to assemble three positions by tray motor cam.

### 5-2-1. Position change during printing operation

| Position     |                                                                              | Operation content                                                                                                                                                                                              |
|--------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System cam   | Tray motor cam                                                               |                                                                                                                                                                                                                |
| Home         | Home                                                                         | ① Ribbon cartridge, paper yes or no judge<br>② Head preheat and fan motor rotation (when there is ribbon or paper)<br>☆ Print operation start                                                                  |
| Paper supply | Home<br>Paper supply<br>Paper supply<br>Paper supply<br>Paper supply<br>Home | ① Ribbon type judge, Assembly judge of ribbon and paper<br>② Beginning detection of ribbon (yellow)<br>③ Paper supply<br>④ Paper chucks the platen.<br>⑤ Jamming judge<br>⑥ Positioning of paper print start   |
| Print        | Home                                                                         | Yellow print                                                                                                                                                                                                   |
| Fast forward | Home                                                                         | Beginning detection of ribbon (magenta)<br>Positioning of paper print                                                                                                                                          |
| Print        | Home                                                                         | Magenta print                                                                                                                                                                                                  |
| Fast forward | Home                                                                         | Beginning detection of ribbon (cyan)<br>Positioning of paper print                                                                                                                                             |
| Print        | Home                                                                         | Cyan print                                                                                                                                                                                                     |
| Fast forward | Home                                                                         | To platen eject paper start position (correctly rotation)                                                                                                                                                      |
| Home         | Home<br>Home<br>Home<br>Paper eject<br>Home                                  | ① Platen is rotated reversely. Paper eject start<br>② Platen Chuck is released.<br>③ Paper is ejected on the paper eject base.<br>④ Paper is fallen on the paper eject tray.<br>☆ Print operation is finished. |

Table 5-2.

### 5-2-2. Home position

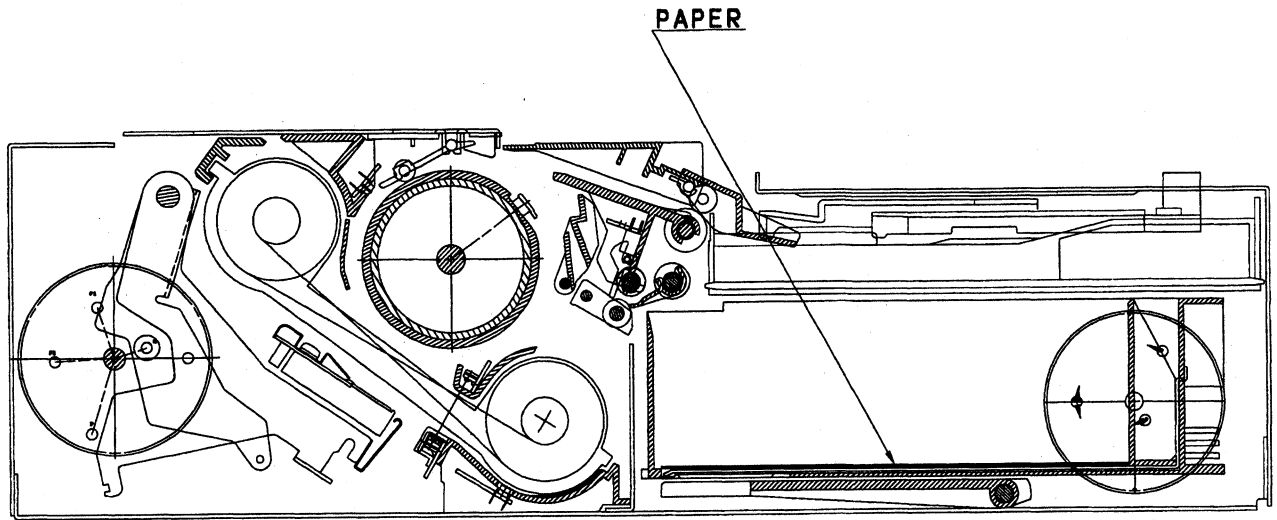


Fig. 5-4.

After power switch is turned ON,

- When power switch is turned ON, if the system cam or the tray motor cam is not stayed at the home position, each cam will be returned to the home position.
- When power switch is turned ON, if the platen is not the home position, the platen will be returned to the home position with only inserted the paper and ribbon.

The system cam, the tray cam and the platen are at the home position, mechanism is not operated.

Yes or no judge of the ribbon cartridge and the print paper is performed, if there is each of them, head preheating and fan motor rotation are performed.

### 5-2-3. Delivery paper position

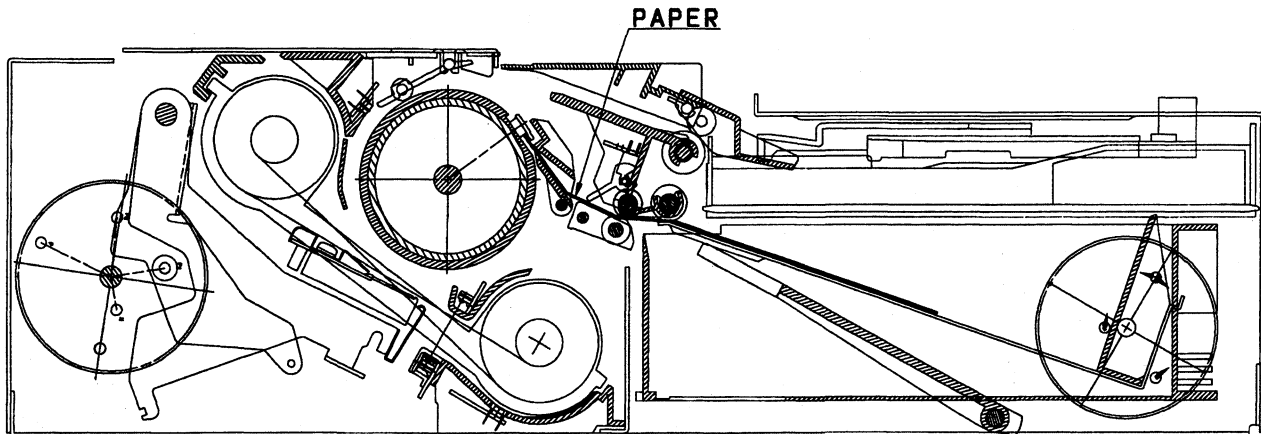


Fig. 5-5.

When the print button is pressed, the unit becomes this position. Ribbon bar code ring is read, the type of ribbon is judged. At the same time, judge of paper supply tray size is performed, combination of ribbon and paper is judged.

Reading of bar code ring is performed only when the system cam is stayed at paper supply position. The paper supply motor is rotated and rotated bar code ring via paper supply block and BC arm. The bar code is read by bar code sensor. If the platen is not the home position, return operation to the home position of the platen is performed.

Next, beginning detection of yellow ribbon is performed. The supply paper motor is rotated and the paper is conveyed to the chuck position. After that, while rotating the platen, paper is chucked. At this time, tray motor cam is set to paper supply position, paper supply arm is lifted, the paper is pressed to the pick up roller. At the same time, separation roller is pressed to the paper supply roller via TM link and supplied to the paper. This separation method is used.

The paper supply FG sensor is counted from when the paper passes through the paper edge sensor, timing of platen rotation start is measured.

When the platen is rotated about 55°, the paper is chucked perfectly. (Actually, the chuck is closed gradually.) At this time, paper conveyance quantity by paper supply roller is little much than paper conveyance quantity by platen.

Next, when the platen is rotated about 120°, the paper jamming sensor condition is surveyed, if the paper is not reached, it is judged chuck miss, printing operation is stopped. In this case, open the lid for a jamming and take from the paper.

If the chuck is correctly performed, print start position of paper is detected.

#### Note:

- The paper supply tray becomes depth because this model corresponds to 200 images. Therefore paper setting is little difficulty. Specially, if the paper is set with it's folded, paper is not supplied. The symptom of this condition, confirm the paper condition in the paper supply tray.
- When paper supply miss is occurred, paper supply arm is down once and paper supply operation is performed again.(until two times) This is not trouble.
- After paper is supplied, paper supply motor is reversely rotated a little in order to return the paper in the paper supply tray. This is not trouble.

#### 5-2-4. Printing position

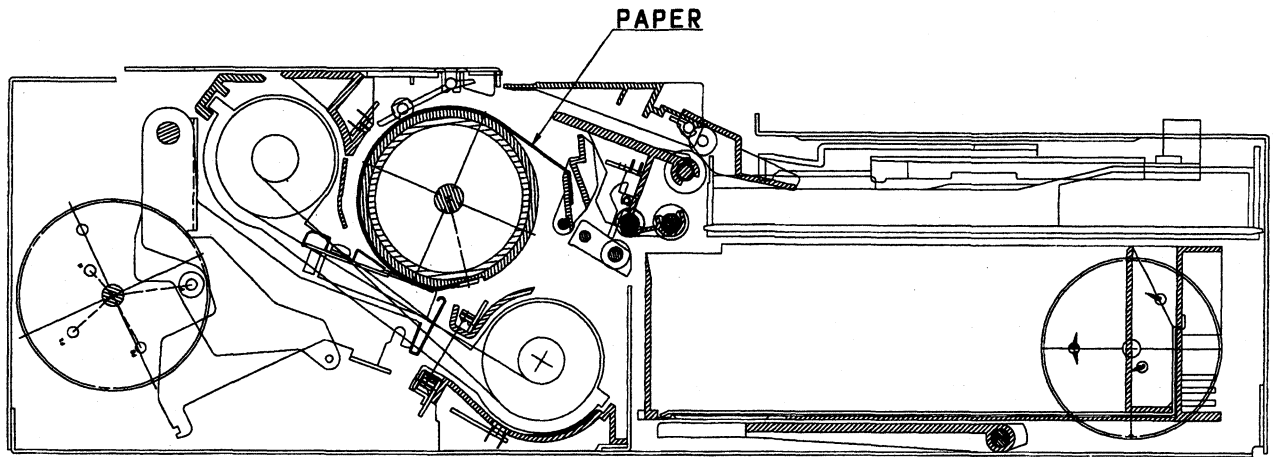


Fig. 5-6.

Print is started from when the platen is rotated about 250°. The system cam is rotated, the thermal head is pressed to the platen and the ribbon motor and platen are rotated. The figure is indicated the print start condition of yellow. The rear edge of paper is reminded at paper lead flap.

#### 5-2-5. Fast forward position

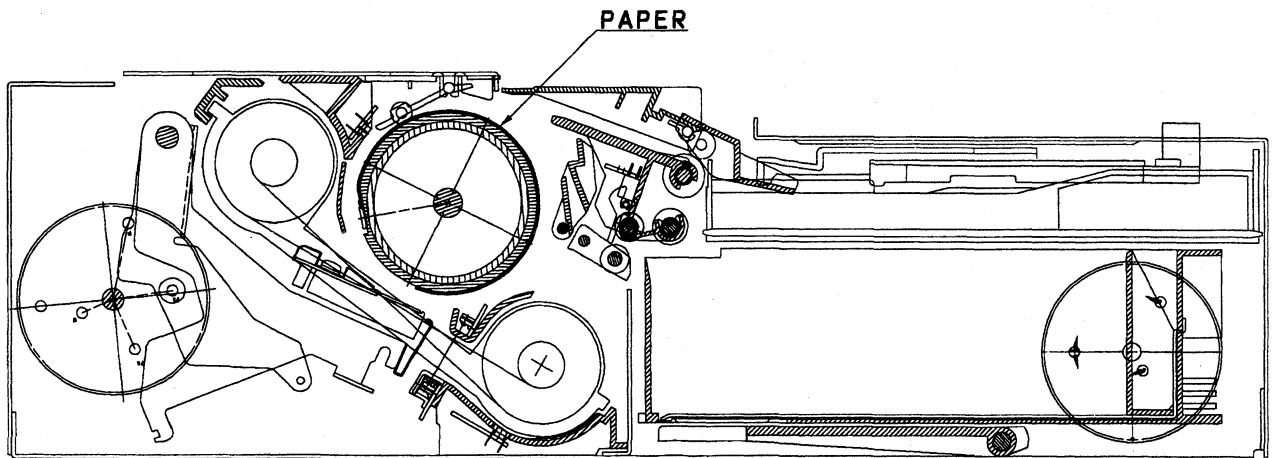


Fig. 5-7.

Each color printing is ended, the thermal head is separated and fast forward is performed.

Platen ..... positioning of paper, positioning of delivery paper start

Ribbon ..... beginning detection of magenta and cyan



#### 5-2-6. Delivery paper position ( Almost same as home position)

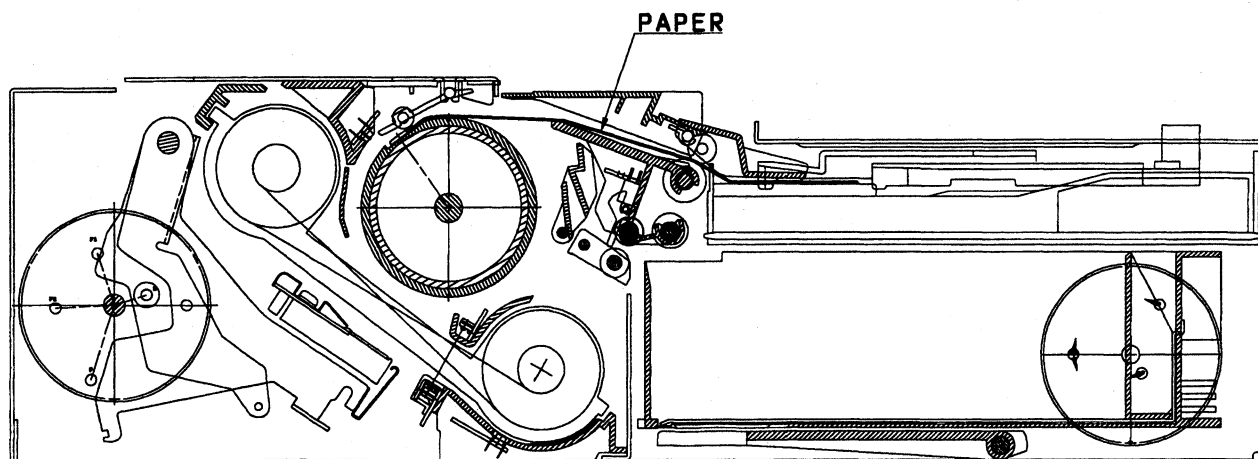


Fig. 5-8.

When the paper is reached at eject start position, the system cam is returned to the home position, the platen is rotated reversely and is ejected the paper. At the same time, eject paper roller is rotated by rotating the paper supply motor. The chuck is opened gradually according to the rotation of the platen, the paper is conveyed to the eject paper base. Lastly, tray motor cam is positioned at eject paper position, eject paper arm is moved and the paper is fallen on the eject paper tray.

### 5-3. PLATEN DRIVE SECTION

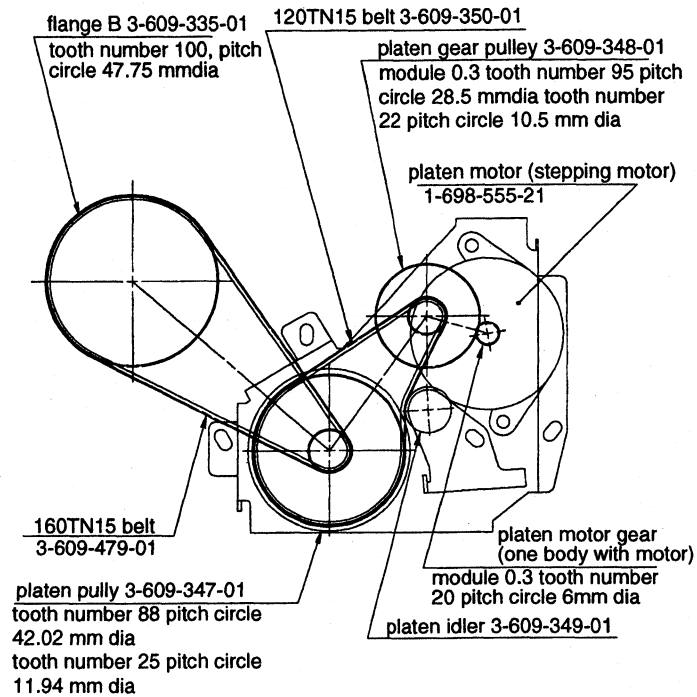
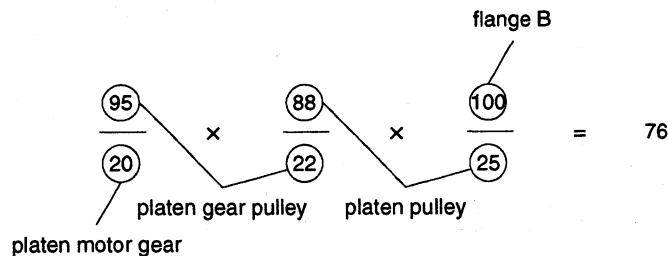


Fig. 5-9.

The platen motor performs platen drive and open and shut of chuck.

In platen drive, module of the gear is used 0.3 mm and the belt is used TN15 type (belt pitch : 1.5 mm) to prevent the unevenness print. Specially, two belts are used, therefore unevenness print will not be disappeared. If the tooth of belt is jumped, the belt may be damaged, therefore replace the belt new one.

#### 5-3-1. Platen drive section gear ratio

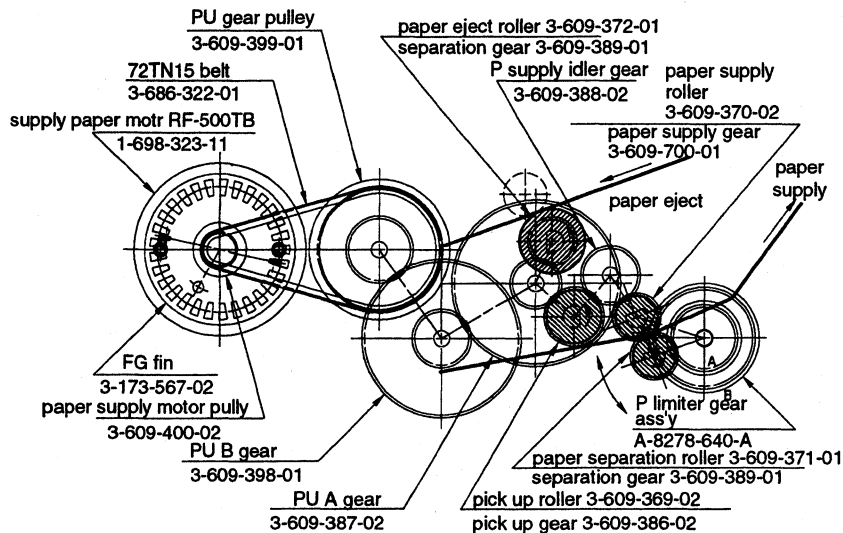


#### 5-3-2. Unevenness print

If the gear or pulley is damaged, a vertical line is periodically appeared on the print. In this case, replace it to applicable pulley or gear as follows.

- Platen motor gear ..... pitch 2.1 mm
- Platen gear pulley ..... pitch 9.8 mm
- Platen pulley ..... pitch 39.3 mm
- Flange B ..... every time same place

## 5-4. PAPER SUPPLY AND EJECT DRIVE SECTION



Paper supply and eject drive section is composed by paper supply motor block ass'y and paper supply block ass'y.

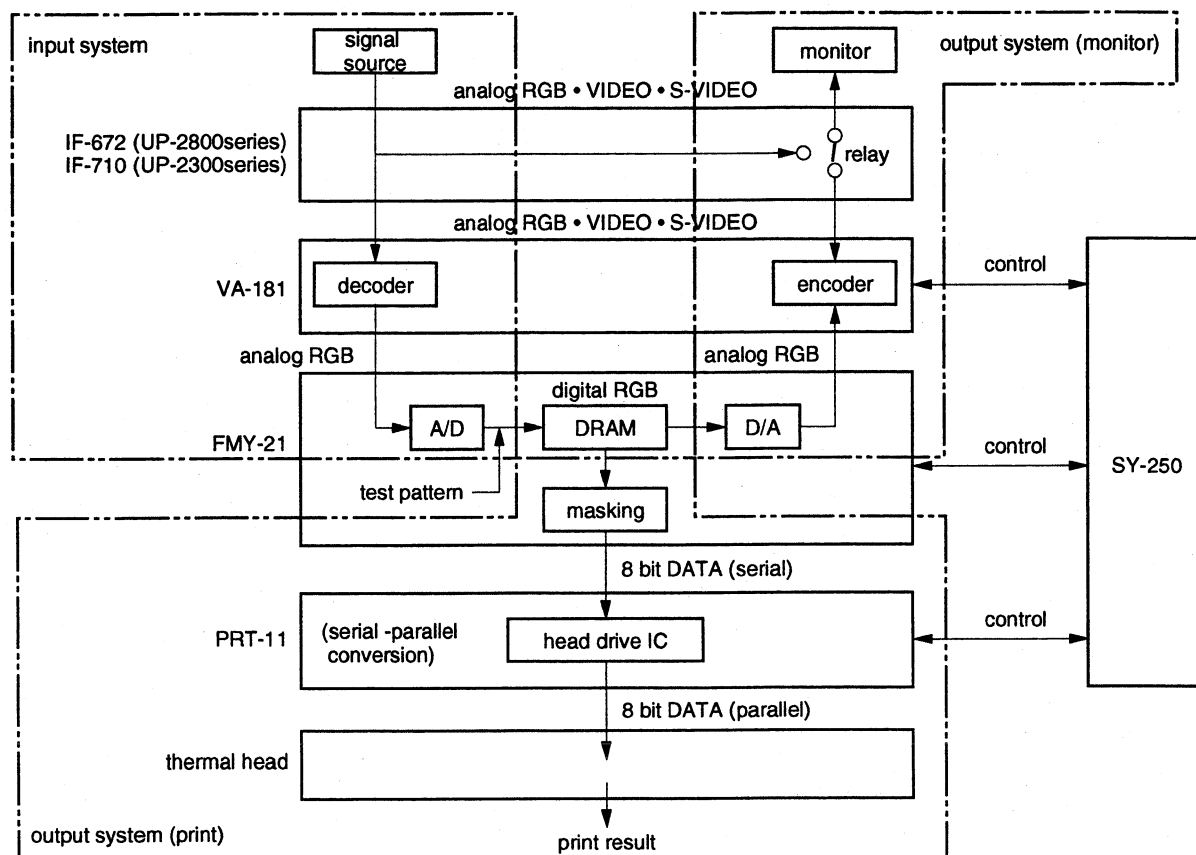
The pick up roller sends the paper in the paper supply tray. In this stage, some papers are conveyed. Next, when the papers are sent to between paper supply roller and separation roller, the most upper paper is only conveyed to the platen block by paper supply roller. The papers later than second paper are not advanced in this position. This is cause that the rotation of paper supply motor is directly transmitted until paper supply motor but, it is transmitted to the separation roller via P limiter gear ass'y.

When only the paper is supplied, the separation roller is pressed to the paper supply roller. When there is one paper or nothing, gear B and A is slipped and separation roller is rotated correctly since transmission drive power from paper supply roller to separation roller is stronger than drive power from P limiter gear (torque limiter). But when more than two papers are put between paper supply roller and separation roller, gears A and B of P limiter gear ass'y are rotated same direction and the separation roller is rotated reversely since direct transmission drive power from paper supply roller to separation roller becomes weak because the paper is slipped, the drive power from P limiter gear becomes bigger. Such as this, when one piece, the paper is conveyed since the separation roller is rotated correctly. When more than two pieces, most upper paper is conveyed only and later two pieces are returned since the separation roller is rotated reversely. Lastly, the printed paper is conveyed to the paper eject section by the paper eject roller.

## SECTION 6 TROUBLE SHOOTING

### 6-1. VIDEO (IMAGE) RELATION TROUBLE

[ flow of video signal ]



The block of printer is divided into three sections in order to solve the trouble related to the print and the video of monitor out.

As FMY-21 board DRAM is center,

Input system : video signal input to IF board to VA-181 board to FMY-21 board A/D to DRAM

Output system(monitor): FMY-21 board DRAM to D/A to VA-181 board to IF board to monitor

Output system(print) : FMY-21 board DRAM to masking to PRT-11 board to head

Make sure which system has the trouble.

- 1) The print is abnormal. The monitor output is normal.  
There may be trouble at the output system(print).
- 2) Both the print and the monitor output are abnormal.  
Make sure the print and the monitor output when the outer signal is inputted.  
Make sure the print and the monitor output when the test pattern is written in the service man mode.  
If the later is normal, there may be trouble at the input system.
- 3) The print is normal. The monitor output is abnormal.  
There may be trouble at output system(monitor).

### Input system relation point

- Is the analog video signal from VA-181 board outputted to the FMY-21 board correctly?  
(TP401, 403, 404) waveform 1, 2, 3
- Make sure digital output of A/D converter (IC1001, 1002, 1003) on the FMY-21 board.  
(TP4165, 4157, to 4164, 4149)(triggered by SWD\_HD) waveform 4
- Are SWD\_VD (TP2035) and SWD\_HD (TP4005) on the FMY-21 board inputted correctly?  
waveform 5, 6

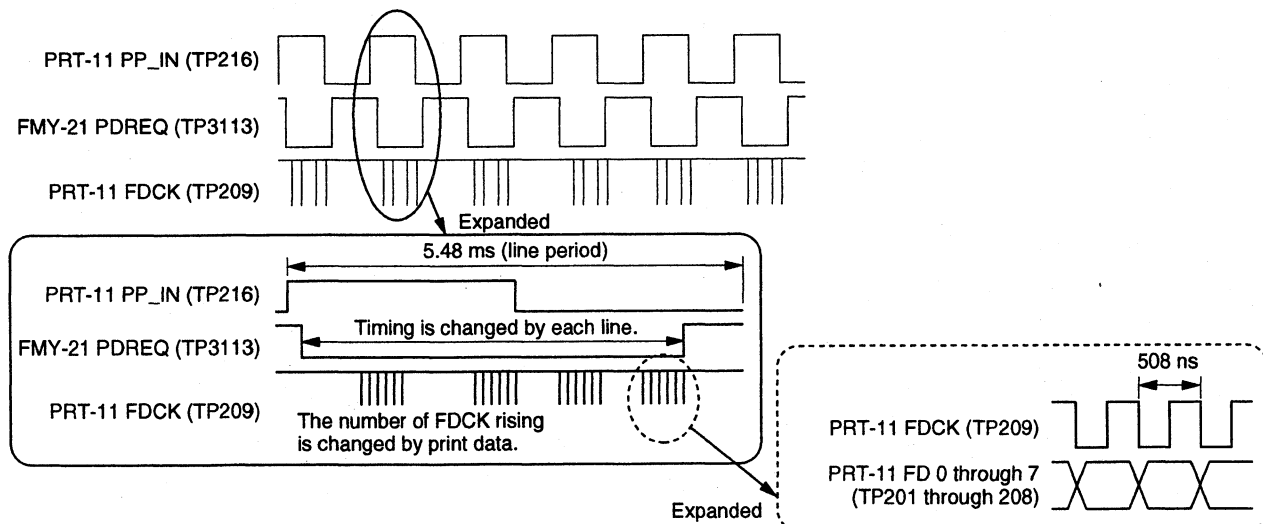
### Output system(monitor) relation point

- Make sure the digital video signal output from DRAM controller on the FMY-21 board.  
(TP4141, 4133 through 4140, 4125)(triggered by SWD HD) waveform 7
- Make sure the analog output of D/A converter(IC1005) on the FMY-21 board.  
(TP1004, 1005, 1006)(triggered by SWD HD) waveform 8, 9, 10
- Make sure the encoder output on the VA-181. (TP802, 803, 804) waveform 11, 12, 13
- Make sure the output from VA-181 to IF board.  
Analog RGB(TP901, 902, 903, 904) waveform 14, 15, 16  
VIDEO(TP907) waveform 17  
S-VIDEO[Y](TP905) waveform 18  
S-VIDEO[C](TP906) waveform 19

### Output system(print) relation point

PP IN signal on the PRT-11 board is the signal that is risen by every print 1 line outputted from CPU on the PRT-11 board. The print data demand signal PDREQ to FMY-21 board is outputted every 1 line (rising down), when receiving the necessary data, the PDREQ signal is risen.

The print data from FMY-21 board is synchronized the FDCK signal and outputted.



## 6-2. ERROR INDICATION

If the printer judges error mode, alarm LED is lighted and the message is displayed on the monitor or liquid crystal. Error messages are indicated as follows.

1. Error display during stand-by mode
2. Error display during print operation

### 1. Error display during stand-by mode

This is caution display to enter printing operation. Perform a treatment according to the following messages.

(Refer to NG\_CODE 5)

| Monitor display           | LCD display                    | Treatment                                                             | NG Code  |
|---------------------------|--------------------------------|-----------------------------------------------------------------------|----------|
| __REMOVE_PAPER : COVER__  | REMOVE_PAPER__<br>COVER__      | Jamming detection of the paper<br>Open the upper lid and take it off. | e0<br>40 |
| __END_OF_RIBBON__         | END_OF_RIBBON__                | Ribbon cutting<br>Replace new one.                                    | e0<br>20 |
| __INSERT_RIBBON__         | INSERT_RIBBON__                | No ribbon<br>Set the ribbon cassette.                                 | e0<br>10 |
| __SET_PAPER__             | SET_PAPER__                    | No paper<br>Set the papers.                                           | e0<br>80 |
| INSERT_RIBBON_AND_PAPER__ | INSERT_RIBBON__<br>SET_PAPER__ | No ribbon and paper<br>Set the ribbon cassette and the papers.        | e0<br>18 |
| __REMOVE_PRINTS__         | REMOVE_PRINTS__                | The paper is jammed at eject exit.<br>Take it off.                    | e0<br>04 |
| __REMOVE_PAPER : TRAY__   | REMOVE_PAPER__<br>TRAY__       | The paper is jammed at paper supply access.<br>Take it off.           | e0<br>02 |
| __CLOSE_COVER__           | CLOSE_COVER__                  | Upper lid of the unit is opened.                                      | e0<br>01 |

## 2. Error display during print operation

This is caution display during the print operation. Perform a treatment according to the following messages.

(Refer to NG\_CODE 1)

| Monitor display                                  | LCD display                          | Treatment                                                                                   | NG Code     |
|--------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------|-------------|
| __MECHA_TROUBLE : HEAD__nn                       | MECHA_TROUBLE_nn<br>HEAD_____        | Head position error<br>Make sure the insertion of ribbon.<br>Make sure the jamming.         | e1<br>10-1f |
| __MECHA_TROUBLE : TRAY__nn                       | MECHA_TROUBLE_nn<br>TRAY_____        | Paper supply tray position error<br>Call the service engineer. (*)                          | e1<br>20-2f |
| ____CHECK_RIBBON____nn                           | CHECK_RIBBON_nn<br>_____             | Ribbon error<br>Make sure the ribbon.                                                       | e1<br>30-3f |
| __MECHA_TROUBLE : PLATEN__nn                     | MECHA_TROUBLE_nn<br>PLATEN_____      | Error when the platen is driven.<br>Make sure the jamming.                                  | e1<br>40-47 |
| __MECHA_TROUBLE : LOAD__nn                       | MECHA_TROUBLE_nn<br>LOAD_PAPER_____  | Paper supply error<br>Make sure the jamming.                                                | e1<br>50-57 |
| __MECHA_TROUBLE : EJECT__nn                      | MECHA_TROUBLE_nn<br>EJECT_PAPER_____ | Eject paper error<br>Make sure the jamming.                                                 | e1<br>58-5f |
| __MECHA_TROUBLE : CHUCK__nn                      | MECHA_TROUBLE_nn<br>CHUCK_____       | Paper chuck error<br>Make sure the jamming.                                                 | e1<br>61    |
| ____PAPER_JAMMING____nn<br>____PRESS[->]KEY_____ | PAPER_JAMMING_nn<br>PRESS > KEY_____ | Jamming detection of the paper<br>Make sure the jamming.<br>(Error is released by [->]key.) | e1<br>62    |
| ____SENSOR_TROUBLE____nn                         | SENER_TROUBLEnn<br>_____             | Defective of the sensor<br>Call the service engineer. (*)                                   | e1<br>70-7f |

- Confirmation of jamming is performed at three portions, lid of upper, paper supply access and eject exit.
- Confirmation of ribbon is performed that the ribbon is correct and the ribbon is cut or twined.
- nn is hexadecimal number. (number at lower side of code)
- In case (\*), after that, the set is driven in error mode.  
To release the error mode, it is needed to drive in service mode or factory reset. Therefore, users can not be solved.

# **[Other errors]**

Alarm LED is not lighted.

| Monitor display                                    | LCD display                         | Treatment                                                                               | Code |
|----------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------|------|
| ____ PLEASE_WAIT ____<br>____ HEAD_IN_COOLING ____ | PLEASE_WAIT____<br>HEAD_IN_COOLING_ | Overheating of the head<br>Wait some time.                                              |      |
| ____ PLEASE_WAIT ____<br>____ SET_IN_COOLING ____  | PLEASE_WAIT____<br>SET_IN_COOLING_  | Overheating of the set<br>Wait some time.                                               |      |
| ____ NO_INPUT ____                                 | NO_INPUT____                        | There is no input image.<br>Input the image or change the input.                        |      |
| ____ INPUT_MISMATCH ____                           | INPUT_MISMATCH_                     | The input signal is mistaken.<br>Input the correct signal.                              |      |
| ____ NO_IMAGE ____                                 | NO_IMAGE____                        | There is no memorized image.<br>Execute after the image is inputted.                    |      |
| ____ PLEASE_WAIT ____<br>____ PRINTING_MEMORY ____ | PLEASE_WAIT____<br>PRINTING_MEMORY_ | Key operation to the memory during the print mode.<br>Wait until the print is ended.    |      |
| ____ PLEASE_WAIT ____<br>____ RESERVED_MEMORY ____ | PLEASE_WAIT____<br>RESERVED_MEMORY_ | Key operation to the memory during print reservation.<br>Wait until the print is ended. |      |
| ____ PLEASE_WAIT ____<br>____ NOW_PRINTING ____    | PLEASE_WAIT____<br>NOW_PRINTING_    | Prohibited key operation during the print mode.<br>Wait until the print is ended.       |      |
| ____ HIT_ANY_KEY ____                              | HIT_ANY_KEY____                     | The unit waits user confirmation (e. g. CAP-STOP)<br>Push any key.                      |      |



## NG command list 1

A way of looking the list: Refer to the displayed NG data.

In case h' 19 , It becomes HEAD FF2 FF1 TIMEOUT.

### NG\_CODE1

| NG command | NG data | contents of NG          | Board/REF               | Check item                                                                                                                                                                                 |
|------------|---------|-------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| h' E1      | h' 11   | HEAD HOME TIMEOUT       | SE-420 board/PH201      | <ul style="list-style-type: none"> <li>Connector is removed.</li> <li>Motor / sensor are defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul> |
|            | h' 12   | HEAD PRN FF2 TIMEOUT    | SE-420 board/PH202      |                                                                                                                                                                                            |
|            | h' 13   |                         | SU-36 board             |                                                                                                                                                                                            |
|            | h' 14   | HEAD TRAY TIMEOUT       |                         |                                                                                                                                                                                            |
|            | h' 15   | HEAD FF PRN TIMEOUT     |                         |                                                                                                                                                                                            |
|            | h' 16   | HEAD HOME FF1 TIMEOUT   |                         |                                                                                                                                                                                            |
|            | h' 17   | HEAD HOME FF2 TIMEOUT   |                         |                                                                                                                                                                                            |
|            | h' 18   | HEAD FF HOME TIMEOUT    |                         |                                                                                                                                                                                            |
|            | h' 19   | HEAD FF2 FF1 TIMEOUT    |                         |                                                                                                                                                                                            |
|            | h' 1a   |                         |                         |                                                                                                                                                                                            |
|            | h' 1b   | HEAD FF1 TIMEOUT        |                         |                                                                                                                                                                                            |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 21   | TRAY HOME LOAD TIMEOUT1 | SE-429 board/PH601      | <ul style="list-style-type: none"> <li>Connector is removed.</li> <li>Motor / sensor are defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul> |
|            | h' 22   | TRAY HOME LOAD TIMEOUT2 | SE-429 board/PH602      |                                                                                                                                                                                            |
|            | h' 23   | TRAY HOME OUT TIMEOUT   | SU-38 board             |                                                                                                                                                                                            |
|            | h' 24   | TRAY OUT HOME TIMEOUT   |                         |                                                                                                                                                                                            |
|            | h' 25   | TRAY LOAD HOME TIMEOUT  |                         |                                                                                                                                                                                            |
|            | h' 26   | TRAY LOAD HOME TIMEOUT  |                         |                                                                                                                                                                                            |
|            | h' 2a   | TRAY PAPER OUT TIMEOUT  |                         |                                                                                                                                                                                            |
|            | h' 2b   | TRAY PAPER IN TIMEOUT   |                         |                                                                                                                                                                                            |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 33   | RIBBON Y TIMEOUT        | SE-423 board/D301, D302 | <ul style="list-style-type: none"> <li>Connector is removed.</li> <li>Motor / sensor are defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul> |
|            | h' 34   | RIBBON MCL TIMEOUT      | SE-424 board/Q350, Q351 |                                                                                                                                                                                            |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 38   | BARCODE START ERROR     | SE-425 board/PH401      | <ul style="list-style-type: none"> <li>Connector is removed.</li> <li>Motor / sensor are defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul> |
|            | h' 39   | BARCODE BIT ERROR       |                         |                                                                                                                                                                                            |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 41   | PLT HOME TIMEOUT        | SE-419 board/PH150      | <ul style="list-style-type: none"> <li>Connector is removed.</li> <li>Motor / sensor are defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul> |
|            | h' 42   | OLT HOME ERROR          | PLT_MTR                 |                                                                                                                                                                                            |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 51   | LOAD TMG TIMEOUT        | SE-427 board/PH501      | <ul style="list-style-type: none"> <li>Connector is removed.</li> <li>Motor / sensor are defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul> |
|            | h' 52   | LOAD TNG FGOUT          | SU-39 board             |                                                                                                                                                                                            |
|            | h' 53   | LOAD PAPER TIMEOUT1     |                         |                                                                                                                                                                                            |
|            | h' 54   | LOAD PAPER TIMEOUT2     |                         |                                                                                                                                                                                            |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 58   | EJECT TMG TIMEOUT       | SE-428 board/PH550      | <ul style="list-style-type: none"> <li>Connector is removed. / Part is defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul>                   |
|            |         |                         |                         |                                                                                                                                                                                            |
|            | h' 61   | CHUCK ERROR             | SE-422 board/PH250      | <ul style="list-style-type: none"> <li>Connector is removed. / Part is defective.</li> <li>There is no sensor sensitive by mistaken assembling the mechanism.</li> </ul>                   |
|            | h' 62   | PP JAM ERROR            |                         |                                                                                                                                                                                            |

## NG command list 2

A way of looking the list: In case h' 0A = 0000 1010(Refer to HEX code converting as binary code.)

NG sensor is first bit(PLT CV) and third bit(PP SIZE sensor)

### NG\_CODE2

| NG command | NG bit | Contents of NG   | Board/REF          | Check item                                                                                                                                                                 |
|------------|--------|------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| h' E2      | bit 6  | LOAD_TMGM sensor | SE-427 board/PH501 | <ul style="list-style-type: none"><li>• Connector is removed.</li><li>• Part is defective.</li><li>• The sensor becomes ON by mistaken assembling the mechanism.</li></ul> |
|            | bit 5  | EJCT_TMGM sensor | SE-428 board/PH550 |                                                                                                                                                                            |
|            | bit 4  | RBN_CST sensor   | Push SW            |                                                                                                                                                                            |
|            | bit 3  | PP_SIZE sensor   | SE-426 board/PH450 |                                                                                                                                                                            |
|            | bit 2  | PAPER sensor     | SE-426 board/PH451 |                                                                                                                                                                            |
|            | bit 1  | PLT_CV sensor    | SE-419 board/S150  |                                                                                                                                                                            |
|            | bit 0  | KICK_OUT sensor  | SE-430 board       |                                                                                                                                                                            |

### NG\_CODE3

| NG command | NG bit | Contents of NG  | Board/REF        | Check item                                                                                           |
|------------|--------|-----------------|------------------|------------------------------------------------------------------------------------------------------|
| h' E4      | bit 6  | Head thermistor | Thermal head     | <ul style="list-style-type: none"><li>• Connector is removed.</li><li>• Thermal head</li></ul>       |
|            | bit 5  | Head thermistor |                  |                                                                                                      |
|            | bit 4  | Room thermistor | PRT-11 board TH1 | <ul style="list-style-type: none"><li>• Part is defective.</li></ul>                                 |
|            | bit 3  | Room thermistor |                  |                                                                                                      |
|            | bit 2  |                 |                  |                                                                                                      |
|            | bit 1  | EEPROM ERROR    | SE-417 board/IC1 | <ul style="list-style-type: none"><li>• Connector is removed.</li><li>• Part is defective.</li></ul> |
|            | bit 0  | EEPROM ERROR    |                  |                                                                                                      |

### NG command list 3

A way of looking the list: In case h' 24 = 0010 0100(Refer to HEX code converting as binary code.)

NG sensor becomes second bit(Load FG ) and fifth bit(RIBBON CD0 ).

#### NG\_CODE4

| NG command | NG bit | Contents of NG   | Board/REF                              | Check item                                                                     |
|------------|--------|------------------|----------------------------------------|--------------------------------------------------------------------------------|
| h' E5      | bit 6  | RIBBON_CD1_ERROR | SE-423 board/D302<br>SE-424 board/Q351 | • Connector is removed./ Part is defective.<br>• Optical axis is out of place. |
|            | bit 5  | RIBBON_CD0_ERROR | SE-423 board/D301<br>SE-424 board/Q350 | • Connector is removed./ Part is defective.<br>• Optical axis is out of place. |
|            | bit 4  | BARCODE_ERROR    | SE-425 board/PH401                     | • Connector is removed./ Part is defective.<br>• Optical axis is out of place. |
|            | bit 3  | PP_JAM_ERROR     | SE-422 board/PH250                     | • Connector is removed./ Part is defective.                                    |
|            | bit 2  | LOAD_FG_ERROR    | SE-418 board/PH101                     | • Connector is removed./ Part is defective.                                    |
|            | bit 1  | RIBBON_FG_ERROR  | SE-417 board/PH1                       | • Connector is removed./ Part is defective.                                    |
|            | bit 0  |                  |                                        |                                                                                |
|            |        |                  |                                        |                                                                                |

A way of looking the list: In case h' 42 = 0100 0010(Refer to HEX code converting as binary code.)

NG sensor becomes first bit(Load TMG sensor ) and sixth bit(JAM sensor ).

#### NG\_CODE5

| NG command | NG bit | Contents of NG | Board/REF                                          | Check item                                     |
|------------|--------|----------------|----------------------------------------------------|------------------------------------------------|
| h' E0      | bit 6  | PP_JAM_ERROR   | SE-422 board/PH250                                 | There is a print paper in the mechanical deck. |
|            | bit 5  | END_OF_RIBBON  | SE-423 board/D301, D302<br>SE-424 board/Q350, Q351 | Ribbon end                                     |
|            | bit 4  | NO_RIBBON      | Push SW                                            | There is no ribbon cartridge.                  |
|            | bit 3  | NO_PAPER       | SE-426 board/PH451                                 | There is no print paper.                       |
|            | bit 2  | REMOVE_PRINTS  | SE-428 board/PH550                                 | EJCT_TMG sensor becomes ON.                    |
|            | bit 1  | REMOVE_PRINTS  | SE-427 board/PH501                                 | LOAD_TMG sensor becomes ON.                    |
|            | bit 0  | CLOSE_COVER    | SE-429 board/S150                                  | PLATEN_COVER is opened.                        |
|            |        |                |                                                    |                                                |

#### NG\_CODE6

| NG command | NG bit | Contents of NG | Board/REF          | Check item                                                           |
|------------|--------|----------------|--------------------|----------------------------------------------------------------------|
| h' E3      | bit 6  | PLT_POS        | SE-419 board/PH150 | • Connector is removed.                                              |
|            | bit 5  | LOAD_FG        | SE-418 board/PH1   | • Part is defective.                                                 |
|            | bit 4  | RBN_FG         | SE-417 board/PH1   | • There is no sensor sensitive by mistaken assembling the mechanism. |
|            | bit 3  | TRAY_POS1      | SE-429 board/PH602 |                                                                      |
|            | bit 2  | TRAY_POS0      | SE-429 board/PH601 |                                                                      |
|            | bit 1  | HED_POS1       | SE-420 board/PH202 |                                                                      |
|            | bit 0  | HED_POS0       | SE-420 board/PH201 |                                                                      |

## 6-3. MECHANISM TROUBLESHOOTING

The three main troubles of the printer mechanism deck are as follows.

1. Paper feed troubles such as miss-feeding, double-feeding, etc.
2. Paper ejection troubles such as jamming which occur after printing
3. Printing troubles from printing results

The following describes how to first locate the area with the troubles and how to solve the troubles smoothly.

### 1. Paper feed troubles

#### Location : Paper supply block assembly

Chuck trouble occurs because the paper has not reached the platen. The possible causes are the paper can not be fed properly due to the wear of the paper feed rubber or the platen could not chuck the paper due to damage of parts.

If paper is double-fed, check the torque limiter and separating roller.

If the top part of the paper is badly scratched (scratches caused by the mechanism are allowed to a certain extent), check the roller as the paper feed load may have become lighter.

#### Location : Paper supply tray assembly

The paper cannot be fed even though the paper feed block assembly and paper supply lever are working normally.

This is because the paper is not being fed from the paper supply tray.

The possible causes are the deformation of the claw of the paper supply tray or the paper is bent when the paper is set to the tray.

### 2. Paper ejection trouble

#### Location : Platen cover assembly

After completing printing, paper ejection is carried out, but the paper is not ejected. Paper is jammed at the top of the platen.

This paper ejection trouble is caused by the damage of paper holding parts of the platen cover (upper cover which can be opened and closed for repairing paper jamming).

#### Location : Paper supply block assembly

Paper jams near the paper ejection exit and not on top of the platen.

This may occur when the paper ejection flap attached to the paper feed block assembly drops or when the support portion is damaged.

### **3. Printing trouble**

#### **Location : Platen motor assembly**

Printing blurring (vertical lines).

This may be caused by the scratches and damage of the gears of the platen motor.

Details of locating the damaged gear are described in the operation manual.

#### **Location : Thermal head**

Horizontal lines on the printed side of the paper.

This may be caused by tone unevenness of the head and wear of the head.

#### **Location : Paper supply tray assembly, head link section**

The print is badly out of position.

To locate the trouble area, print using the following method. First, print using a standard size paper. The just before printing is completed, open the print cover.

The platen stops. Check the gap width between the black rubber of the platen and paper. If the gap is consistent throughout from top and bottom, it means that the print is out of position because the head is not attached at the proper position. Check the head link section around the head attached.

If the gap is not consistent, check the paper supply tray.